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## Environmental Impact Statement

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# Rural Abandoned Mine Program

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As Authorized by: Section 406 of the Surface Mining Control and Reclamation Act of 1977

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Soil  
Conservation  
Service

United States  
Department of  
Agriculture

Washington, D.C.

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Agriculture



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SOIL CONSERVATION SERVICE  
U.S. DEPARTMENT OF AGRICULTURE

FINAL ENVIRONMENTAL IMPACT STATEMENT (EIS)  
RURAL ABANDONED MINE PROGRAM (RAMP)



Abstract:

The Rural Abandoned Mine Program (RAMP) will help landowners develop and apply plans for the reclamation, conservation, and development of eligible lands affected by coal mining. Participation in the program is voluntary. The program will be carried out in cooperation with conservation districts. RAMP provides cost sharing to landowners through long-term contracts funded through Congressional appropriations from the Abandoned Mine Reclamation Fund. This statement explores alternative methods to administer RAMP and the environmental consequences of the selected program alternative. It demonstrates that the environmental effects of individual actions under the program will not have significant adverse effects on the human environment. There will be cumulative impacts over the life of the program. These impacts will be caused by the reduction of acid mine drainage, erosion, and sedimentation. Streams, ponds, and land will be improved for fish, wildlife, and human use. Areas subject to landslides and other hazardous conditions will be stabilized, reducing safety hazards to people and property. Returning the land to beneficial use will improve productivity, increase economic return, enlarge the tax base, improve wildlife habitat, and enhance the visual quality of the landscape. The use of funds under this program is an irreversible and irretrievable commitment of resources. Final program rules and regulations will be issued 30 days after the final EIS is made available to the public.

Norman M. Berg  
R. M. Davis, Administrator, SCS  
July 3, 1978

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## Summary

### Introduction

The Soil Conservation Service (SCS) proposes to implement policies, procedures, and regulations for the Rural Abandoned Mine Program (RAMP) in accordance with Section 406, Title IV, Public Law 95-87; 91 Stat. 460: (30 U.S.C. 1236). The purpose of this environmental impact statement (EIS) is to evaluate the potential environmental consequences of implementing the program.

Title IV of Public Law 95-87 established an Abandoned Mine Reclamation Fund and four types of reclamation programs: Federal, State, Indian, and rural lands. The Secretary of the Interior administers all of the abandoned mine reclamation programs except the rural lands program. The U.S. Department of Agriculture administers the Rural Abandoned Mine Program (RAMP) through the Soil Conservation Service (SCS).

A 1977 Soil Conservation Service inventory indicates that there are 1.1 million acres of abandoned coal mine lands in the United States. The conditions on most of this acreage adversely affect people and the quality of their environment. Therefore, the objectives of RAMP are: (1) to protect people and the environment from the adverse effects of unclaimed or inadequately reclaimed coal mine lands; (2) to conserve and promote the development of the soil and water resources on these lands through reclamation.

The priorities for funding reclamation work are:

1. Protection of public health, safety, general welfare, and property from any extreme danger caused by past coal mining practices;
2. Protection of public health, safety, and general welfare from the adverse effects of past coal mining;
3. Restoration of the environment and land and water resources where they have been degraded by coal mining.

The program alternative selected for RAMP is based on full annual funding (an average of \$40 to \$50 million) allocated for use nationwide. Land may be restored to all eligible post reclamation land uses; i.e., cropland, hayland, pastureland, non-commercial recreation land, wildlife land, and woodland, in accordance with program funding priorities.

### Environmental Consequences

The environmental consequences are discussed in a general manner because site-specific impacts cannot be determined until individual applications for RAMP assistance are received from land users.

The environmental consequences of the "no action" alternative are as follows:

1. The annual reclamation and development of up to 5,800 acres of abandoned coal mine land would not be accomplished;
2. Acid mine drainage would persist and approximately 510,000 tons of soil erosion per year would not be eliminated. Both would continue to impair water quality and cause sedimentation of streams and lakes;
3. Numerous economic and environmental improvements and benefits to public health, safety, and general welfare would be foregone. These include more attractive landscapes, better wildlife habitat, increased agricultural production, and an improved tax base.

The environmental consequences of implementing the program selected are:

- Full annual funding of RAMP (approximately \$40 million) would reclaim about 5,800 acres of abandoned coal mine lands yearly to a more beneficial land use. The total area to be reclaimed by RAMP over its 15-year life is estimated to be 87,000 to 109,000 acres. Reclamation of eligible land (approximately 5,800 acres per year) will depend primarily on the total receipts to the Abandoned Mine Reclamation Fund and how much of these receipts is allocated to the Secretary of Agriculture;
- Reclamation of 87,000 acres of abandoned unreclaimed coal mine land will yield approximately 35,000 acres woodland, 26,100 acres pastureland, 17,200 acres wildlife land, and 8,700 acres of cropland.
- Soil erosion would be reduced by approximately 510,000 tons per year by applying conservation treatment;
- Short-term increases in soil erosion by wind and water would occur during and following construction activities until vegetation becomes established;
- Water surface area may be reduced on reclaimed lands;
- Reduction of water runoff from small storms. The effect on storm water runoff decreases as the storm magnitude increases. The overall effect on flood-prone areas would be small;
- Improved water quality from reduced acid mine drainage, less sedimentation, and decreased turbidity;
- A temporary increase in stream turbidity during construction until vegetation is established;
- Improved fish and wildlife habitat on approximately 5,800 acres per year;
- Temporary disruption of reclamation areas during construction, including increased traffic and air pollution from exhaust fumes and dust;

- Long-term enhancement of the visual quality of the landscape;
- Elimination of public health and safety hazards;
- Increased opportunities for certain types of recreation.
- On a national average, gross value of agricultural output on lands reclaimed would increase by \$31 per acre;
- Depending on the income-producing potential of the reclaimed land, the tax base may substantially increase;
- Income and employment would be generated by construction expenditures during the reclamation process and by increased agricultural production after reclamation. Greater production income and employment would increase final demand. This increase in demand would be a further economic stimulus.

#### Operation of the program

RAMP will be administered by the SCS in cooperation with local conservation districts. Land user participation in RAMP is voluntary. Through long-term contracts of 5 to 10 years, the program provides cost-share assistance for installing appropriate reclamation and conservation practices on abandoned coal mine lands. These contracts are based on approved reclamation plans prepared by land users with technical assistance from the SCS. The reclamation plans will prescribe vegetative, mechanical, and management practices that will achieve the objectives of RAMP and the land user.

SCS will use environmental assessments in planning reclamation with land users. These assessments will include an onsite and offsite inventory and analysis, evaluation of feasible alternatives, and identification of significant environmental impacts. The planning process is organized so that major decision points are reached where SCS and the land user decide whether to proceed with the proposed reclamation. The scope and complexity of the assessment will be consistent with the scope and complexity of the proposed reclamation.

If the reclamation site is 120 acres or less and the main benefits are onsite, the RAMP rate of cost sharing will be 80 percent. The cost-share rate will be increased to as much as 100 percent when the main benefits are offsite and the cost for land users would be a financial burden that would keep them from participating. It will be decreased to as low as 60 percent when there is a high potential for an increase in income as a result of reclamation. There would be a reduction of up to 0.1 percent per acre in the Government's share for reclaiming areas exceeding 120 acres. The maximum area that can be reclaimed with cost-share assistance is 320 acres per landowner.

#### Program alternatives

The SCS identified the following factors that would affect how RAMP is implemented:

1. The level of program funding;
2. The allocation of program funds by geographical area;
3. Land uses after reclamation;
4. Funding priorities;
5. Cost-sharing rates;
6. The minimum length of contracts;
7. Eligible land users.

Factors 1, 2, and 3 were the considered in selecting the alternatives for implementing the program. Factors 4, 5, 6, and 7 were eliminated because they could be changed little under the law or, if they were varied to any extent, they would not meet the objectives of the program. Therefore, they were included in all RAMP alternatives that were considered.

The amount of money transferred to the Secretary of Agriculture from the Abandoned Mine Reclamation Fund will directly determine the amount of abandoned coal mine land that could be reclaimed. Upon appropriation, up to 20 percent of the money deposited in the fund will be transferred annually to USDA to operate RAMP. A full 20 percent transfer to USDA would amount to an average of \$40 to \$50 million annually over the life of the program. To operate the program for FY 1978 and 1979, the Office of Management and Budget has authorized \$5 million and \$10 million, respectively.

#### Conclusion

The cumulative environmental consequences of implementing the program are significant. The environmental benefits are significant and adverse impacts are not significant. The SCS concludes from this EIS that the environmental impacts of the majority of individual site-specific, contracts entered into under this program are adequately disclosed with few exceptions. An environmental assessment conducted during the reclamation planning process for each RAMP contract will identify potential environmental impacts.



## Purpose and Needs

A 1977 Soil Conservation Service inventory determined that there are 1.1 million acres of abandoned coal mine lands that are unreclaimed or inadequately reclaimed in 377 counties within 29 States. Much of this acreage adversely affects people and the environment by endangering public safety and health, decreasing the utility of land, impairing visual quality, and reducing fish and wildlife habitat.

The Soil Conservation Service (SCS) proposes to implement policies, procedures, and regulations to carry out the Rural Abandoned Mine Program (RAMP) in accordance with Section 406, Title IV, Public Law 95-87; 91 Stat. 460: (30 U.S.C. 1236). The objectives of the program are to protect people and the environment from the adverse effects of past coal mining practices and to promote the development of the soil and water resources of unreclaimed coal mine lands. These mined lands are to be stabilized by:

- Controlling erosion and sediment on mined areas and areas affected by mining;
- Reclaiming lands and water for useful purposes; and
- Enhancing water quality or quantity where disturbed by mining practices.

The priorities for funding reclamation work as stated in P.L. 95-87 are:

1. "Protection of public health, safety, general welfare, and property from extreme danger of adverse effects of coal mining practices;
2. "Protection of public health, safety, and general welfare from adverse effects of coal mining practices;"
3. "Restoration of land and water resources and the environment previously degraded by adverse effects of coal mining practices including measures for the conservation and development of soil, water (excluding channelization), woodland, fish and wildlife, recreation resources, and agricultural productivity." (A servicing order will be established within each priority at the local level to deal with the more serious environmental problems first.)

## Alternatives for the RAM Program

How the program is to be conducted is restricted by Title IV of Public Law 95-87. However, the following seven program factors were identified as possible variables that might affect how RAMP is implemented:

1. Level of funding of the program;

2. The allocation of funds by geographical area;
3. Land uses after reclamation;
4. Funding priorities; variation in funding priorities is limited because they are established by the law.
5. Cost-sharing rates; these rates would be maximized to foster program participation.
6. Minimum length of agreement;
7. Eligible land users; little variation is permitted under the law.

Factors 1, 2, and 3 form the range of alternatives for implementing the program and are described in more detail in this section.

Factors 4-7 were eliminated because they could be changed little under the law or, if they were varied to any extent, they would not meet the objectives of the program. Therefore, they were included in all alternative programs considered in selecting the final program.

The three major factors considered in determining the alternatives for the RAM Program are described and analyzed below. They are reflected in the proposed program rules and regulations.

1. Level of funding:

The amount of money transferred to USDA from the Abandoned Mine Reclamation Fund to operate RAMP will directly determine the amount of abandoned coal mine land that can be reclaimed. Section 401 of Public Law 95-87 authorizes the Secretary of the Interior to transfer up to one-fifth of the money deposited in the Abandoned Mine Reclamation Fund to the Secretary of Agriculture for carrying out RAMP. A range of \$0 to \$40 million per year was considered in assessing the program alternatives.

2. Allocation of program funds by geographical area:

Where RAMP is implemented is another variable. The 29 States that have abandoned coal mine lands are in the East, Midwest, and West. Each of these regions has different environmental characteristics that influence reclamation treatments and costs and their environmental consequences. One region could be selected for reclamation actions in order to maximize either public environmental benefits or reclaim the greatest number of acres at the least cost.

3. Post reclamation land uses

Under Public Law 95-87, a wide variety of post reclamation land uses are permitted.

Depending on the land use selected, there would be a different beneficial effect. Emphasizing the development of agricultural lands would maximize economic benefits. Emphasizing reclamation for wildlife lands would maximize environmental benefits.

The following program alternatives were developed by combining different levels of funding, geographic areas of application, and land uses:

Alternative 1 - No program funding: This alternative would provide no funds for RAMP. Funds collected under the Abandoned Mine Reclamation Fund (Section 401, Title IV) would be applied only to the State or Indian Land Reclamation Program (Section 405) or a program of Federal acquisition and reclamation of land adversely affected by past coal mining (Section 407) administered by the USDI Office of Surface Mining.

Alternative 2 - Geographic exclusions: This alternative would provide \$40 million each year for assistance to land users in 19 of the 29 States where eligible abandoned coal mine lands occur. These States contain 169 counties each of which has more than 1,000 acres of abandoned coal mine lands. Altogether these counties contain one million acres of affected land. These States are: Alaska, Maryland, Texas, Arkansas, Colorado, Wyoming, Iowa, Virginia, Tennessee, Oklahoma, Kansas, Missouri, Alabama, West Virginia, Kentucky, Illinois, Ohio, Indiana, and Pennsylvania.

Alternative 3 - Land use eligibility: This alternative would provide a full level of funding for the reclamation and development of abandoned coal mine lands to the following land uses: Commercial, cropland, hayland, pastureland, industrial, rangeland, recreation, residential, wildlife land, and woodland.

Alternative 4 - Selected alternative: This alternative will provide full funding (approximately \$40 to \$50 million per year) for assistance to land users in all 29 States where abandoned coal mine lands occur. Eligible post reclamation land uses are restricted to cropland, hayland, pastureland, rangeland, non-commercial recreation land, wildlife land, and woodland and the supporting uses associated with these land uses.

#### What all program alternatives have in common

Reclamation will be carried out on a voluntary basis in cooperation with conservation districts and/or local reclamation committees. RAMP provides cost sharing to land users through 5- to 10-year contracts based on approved reclamation plans. The following points are common to all the program alternatives that were considered and fulfill the program's objectives.

#### Funding and eligibility

RAMP is funded through appropriations by Congress from the Abandoned Mine Reclamation Fund. The funds come from reclamation fees collected

under the provisions of Section 402(a) of Public Law 95-87. The fund is authorized to receive deposits for 15 years. The Secretary of the Interior may transfer up to 20 percent of these funds to the Secretary of Agriculture. Total available funds for the program could, upon appropriation, exceed \$40 million per year. The Office of Management and Budget has authorized \$5 million for FY 1978 and \$10 million for FY 1979 to operate the RAM Program.

Abandoned or inadequately reclaimed coal mine lands that existed before August 3, 1977, are eligible for RAMP. These are lands that were either disturbed or affected by past coal mining practices. Lands that are under Federal ownership and operation or for which there is a continuing reclamation responsibility on the part of a mine operator or permittee under State or Federal law are not eligible for the program. Lands are also not eligible if a State is responsible for their reclamation as a result of a bond forfeiture. Abandoned lands that are under contract to be remined for coal are not eligible.

Eligible land users are landowners of surface rights (including owners of water rights), residents, tenants, or their agents operating as individuals, partnerships, associations, corporations, estates, trusts, or nonfederal public entities who own or have control of eligible lands and waters. Residents or tenants who do not own the land must have control of the land for the period of the proposed contract and have the written consent of the owner. The term "land user" is used in the preceding sense throughout this EIS.

The eligible lands or waters will be reclaimed for beneficial use. The use of the reclaimed land is based upon the needs and objectives of the land user, its compatibility with surrounding land use, and the practicability and feasibility of restoring the soil and water resources to support the use selected. The maximum acreage of land and water that may be reclaimed by a landowner with cost sharing under this program is 320 acres. (The maximum acreage will be determined on the basis of ownership rather than tenancy.)

#### Assistance is obtained through reclamation plans

A reclamation plan will be prepared by the land user in cooperation with the conservation district with technical assistance provided by SCS or other professionals. The plan will contain a written record of the land user's decisions, including the planned land use and a schedule and description of the conservation treatment required to meet the reclamation objective. Consideration will be given to the resource capability of the land, feasibility of reclaiming the land, and adjacent land use.

The reclamation plan will identify all reclamation and conservation practices needed to realize the reclamation objective and to protect the soil and water resources after reclamation. It could consist of a single practice, but most frequently will require a combination of practices forming a resource management system for the affected land. All essential practices will be included. Other practices that enhance the quality of the environment over and above the essential conservation

treatment may be included. An example would be improving wildlife habitat by providing additional cover such as grass field borders or shrub plantings where cropland is the planned land use. All conservation treatment must meet the standards and specifications in the local SCS technical guide. These standards and specifications will meet the minimum requirements of applicable Federal and State laws.

#### Composition of reclamation plans

The approved reclamation plan will include the vegetative, mechanical, and management practices needed to reclaim, conserve, or develop soil and water resources.

Vegetative practices are most important in providing a protective covering on reclaimed areas. They assist in erosion control and the production of a useful crop. The species and the establishment techniques used must fit the local climate, soil, and topographic conditions as well as the land user's objectives. Critical area plantings may supplement a woodland planting if the risk of soil erosion during the tree canopy development period is high. Pasture and hayland plantings would be established primarily for livestock forage, but would also play an important role in controlling soil erosion. Consequently, the mixture of species must reflect this dual objective.

Mechanical practices are used mainly to support and protect the vegetation and are usually essential for controlling runoff and erosion. They should control and dispose of surface and subsurface water by collecting and diverting water from the reclaimed area or conveying it through the area to a point of safe discharge without causing excessive erosion or pollution. Practices used for diverting water are diversions, terraces, dikes, land shaping and grading, subsurface tile or tubing, and surface ditches. Practices that convey water through an area are chutes, flumes, waterways, grade stabilization structures, pipes, and culverts. The main principle in designing water disposal practices is to maintain nonerasive velocities. In some cases a covering or lining such as rock riprap or concrete is needed to protect the soil from erosion.

Sediment control practices are designed to detain water long enough for soil particles to settle out. They may be temporary or permanent. Temporary practices use materials such as sandbags or rock placed across a drainageway to trap the sediment. More permanent measures include sediment basins or ponds to catch and retain sediment-laden runoff from the reclaimed area.

Water disposals and catchments need to be considered in planning a system to control erosion and sediment. These measures would be modified to function properly in areas that have different topographies, climates, and types of mining.

Conservation practices are also used to stabilize reclaimed areas and improve fish and wildlife habitat. They may include: planting trees, shrubs, grasses, and legumes; water control, conveyance, or impoundments; and the management of these practices for wildlife food and cover.

The plan will include appropriate measures to reduce public health and safety hazards and upgrade the quality of the environment as needed to meet funding objectives of the RAM Program. This may include control of subsidence, mine sealing, control of mine fires, treatment of highwalls, land shaping, and other corrective actions. Technical expertise from SCS, other agencies, and consultants will be used to develop solutions for these problems. The SCS technical guide will be updated, as needed, to include standards and specifications for achieving these solutions. Standards and specifications from the Office of Surface Mining and State reclamation agencies will be used in updating local SCS technical guides.

#### Provisions of contract

A land user who has an approved reclamation plan would enter into a contract with SCS to receive Federal cost-share assistance through RAMP. The contract will cover a period of at least 5 years but will not exceed 10 years. When signed by the land user and the SCS contracting officer, it obligates the land user to apply the land use and conservation treatment as scheduled in the plan in accordance with SCS standards and specifications.

If during the period that the contract is in effect, the land user sells or transfers his interest in the property, the contract is transferred with the land or terminated. If the contract is transferred, the new landowner assumes the contract at the time of the sale. If it is terminated, the land user shall refund cost-share payments received up to the value of the land.

#### Operation and maintenance

The contract includes a schedule for installing conservation practices and provisions for operating and maintaining the applied conservation treatment during the contract period. The land user is responsible for the operation and maintenance of the treatment installed.

The contract may be modified to provide cost sharing to repair or reapply conservation treatment that did not achieve the desired results or failed through no fault of the land user. During the contract period, annual reviews will be made of the applied treatment. This review will be used to note the condition of applied conservation treatment and the land users progress in fulfilling the terms of the contract.

#### Basis of cost sharing

The contract provides the basis for RAMP cost sharing. The land user could install the planned conservation treatment, arrange to have the practices installed by SCS under a Federal contract, or hire a local contractor. In all cases, the practices installed must meet SCS standards and specifications to be eligible for cost-share payment.

Cost-share rates are based on the following criteria:

1. Whether the main benefits of reclamation are offsite (accrue to the public) or onsite;

2. The land user's financial burden when the main benefits of reclamation are offsite;
3. The proportionate reduction of cost-share rates between 120 acres and 320 acres as required by Section 401(d) of the law; and
4. The increased potential for income production after reclamation.

The application of conservation treatment is considered a financial burden when the land user's costs cannot be recovered within the contract period and would probably prevent participation in the program. Offsite benefits are effects that benefit surrounding land users or the public in general as a result of implementing a reclamation plan. Examples of offsite benefits are the reduction of erosion or sediment damage, elimination of a public safety or health hazard, improvement of water quality, or improved visual quality.

When the reclamation site is 120 acres or less and the main benefits are onsite, the Federal rate of cost sharing will be 80 percent. The Federal share could be increased to as high as 100 percent when the main benefits are offsite and there is a financial burden. It could be decreased to as low as 60 percent when there is a high potential for increased income as a result of reclamation. There would be a reduction of up to 0.1 percent per acre for reclaiming areas exceeding 120 acres up to a maximum of 320 acres.

Bureau of Mines Information Circulars IC-8737 (1977) and IC-8695 (1975) show that reclamation costs vary greatly from one site to another. In general, however, reclamation costs are higher in the East, slightly less in the Midwest, and significantly lower in the West. The weighted-average cost for reclamation to all eligible uses by region is: \$7,600 per acre in the East, \$5,600 per acre in the Midwest, and \$2,700 per acre in the West. (See figure 1.)

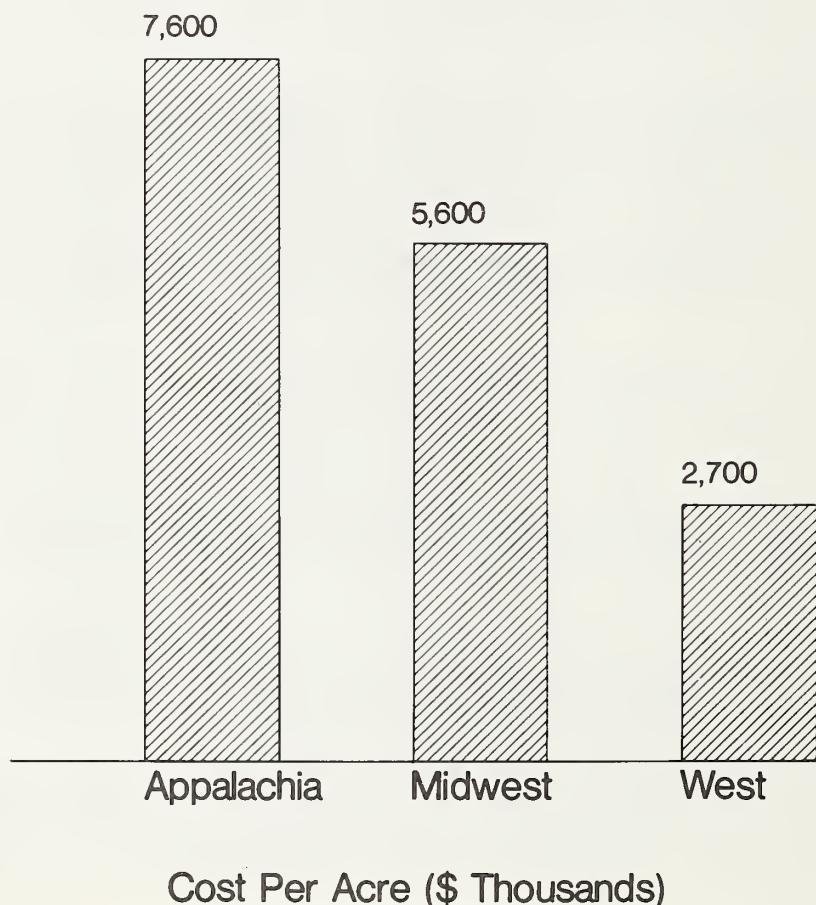
The average reclamation cost expected for the program selected is \$6,900 per acre. This figure is based on a weighted average of the amount of abandoned lands disturbed by coal mining in each region and reflects the large acreage of disturbed lands in the East.

The national average of the cost to reclaim land to cropland and pastureland is \$8,000 per acre. This is based on statistics found in Surface Mining and Our Environment: A Special Report to the Nation (U.S. Department of Interior, 1967).

#### Operation of the program

An environmental assessment is an integral part of reclamation planning. Its scope and complexity will be consistent with the scope and complexity of the proposed reclamation. An interdisciplinary team of SCS and/or other cooperating agency personnel will make the assessment. It begins with the review of the application by the SCS official and continues through the development of the reclamation plan. The assessment includes an onsite inventory, analysis and evaluation of feasible alternatives, and identification of significant environmental impacts.

**Figure 1 Average Reclamation Costs for Abandoned Coal Mine Lands**



Four major points where SCS or the land user makes decisions concerning further reclamation action are:

1. After an application has been evaluated to verify eligibility, reviewed to determine whether the main benefits are onsite or offsite, and assigned a funding priority.
2. After a specific inventory and analysis, the evaluation of feasible treatment alternatives, and the determination of costs and environmental impacts.
3. After development of an acceptable reclamation plan as a basis for a contract; and
4. Before signing of a contract for cost-share assistance.

The program will be conducted in compliance with Executive orders and Federal, State, and local environmental laws and regulations. These include, but are not limited to: Endangered Species Act of 1973; Clean Air Act Amendments of 1970; National Environmental Policy Act of 1969; Clean Water Act of 1972; Executive Order 11514, Protection and Enhancement of Environmental Quality, 1970; Executive Order 11593, Protection and Enhancement of the Cultural Environment, 1971; Executive Order 11990, Protection of Wetlands, 1977; and Executive Order 11988, Protection of Flood Plains, 1977, National Historic Preservation Act of 1966, and the Archeological and Historic Preservation Act of 1974.

Channelization of streams is prohibited under this program. Channelization as used herein means the overall widening, deepening, or realignment of a perennial stream channel or construction of a non-vegetative protective lining over all or a part of its perimeter. (See SCS Channel Modification Guidelines, Part B, items 4, 5, 6, and 7 as published in Federal Register on March 1, 1978, 43 FR 8278.)

A proposed action will not require a site-specific EIS if it has been determined that it is not a major Federal action or its effects are adequately discussed in this program EIS.

However, if the environmental assessment for a proposed action indicates that it will have a significant adverse effect on environmental quality, the Responsible Federal Official (RFO) will:

1. Modify the action to eliminate or mitigate the significant adverse impacts, or
2. Withdraw Federal assistance if significant adverse impacts cannot be eliminated or mitigated.

If it is determined that a proposed action is not adequately discussed in the program EIS and is a major Federal action that will significantly affect environmental quality, a site-specific EIS will be prepared. When a decision is made to prepare an EIS, a notice of intent will be published in the Federal Register.

No EIS will be required for any action taken to prevent loss of life or property under the extreme danger provision covered by funding priority number one. These actions will be taken based on a limited environmental assessment that identifies the possible loss of life or property and associated major impacts.

## Description of the Affected Environment

### Areas affected

The United States has 1.1 million acres of abandoned coal mine land needing reclamation (USDA, 1977). It is located in 29 States, with 97 percent concentrated in 14 States. These States are:

<u>East</u>	<u>Acres</u>	<u>Midwest</u>	<u>Acres</u>
Pennsylvania.....	240,000	Illinois.....	118,700
Ohio.....	196,700	Missouri.....	70,700
Kentucky.....	101,600	Kansas.....	41,300
West Virginia.....	84,900	Oklahoma.....	36,100
Alabama.....	72,300	Indiana.....	25,900
Tennessee.....	29,600	Iowa.....	14,000
Virginia.....	23,700	Arkansas.....	5,620
Maryland.....	2,800	Texas.....	3,300
Georgia.....	1,680	Michigan.....	140
Total	753,280	Total	315,760
<u>West</u>	<u>Acres</u>		
Wyoming.....	9,657		
Colorado.....	7,089		
Alaska.....	2,700		
Montana.....	1,955		
North Dakota.....	1,050		
South Dakota.....	890		
Utah.....	635		
Arizona.....	400		
Washington.....	42		
New Mexico.....	22		
California.....	10		
Total	24,450		

Figure 2 shows the location of the abandoned mine land by county.

An estimate of how this land is now used is shown in table 1 in the Environmental Consequence Section. (Figure 3 shows the geographic distribution of all abandoned mine land.)

### Climate, topography, and land use

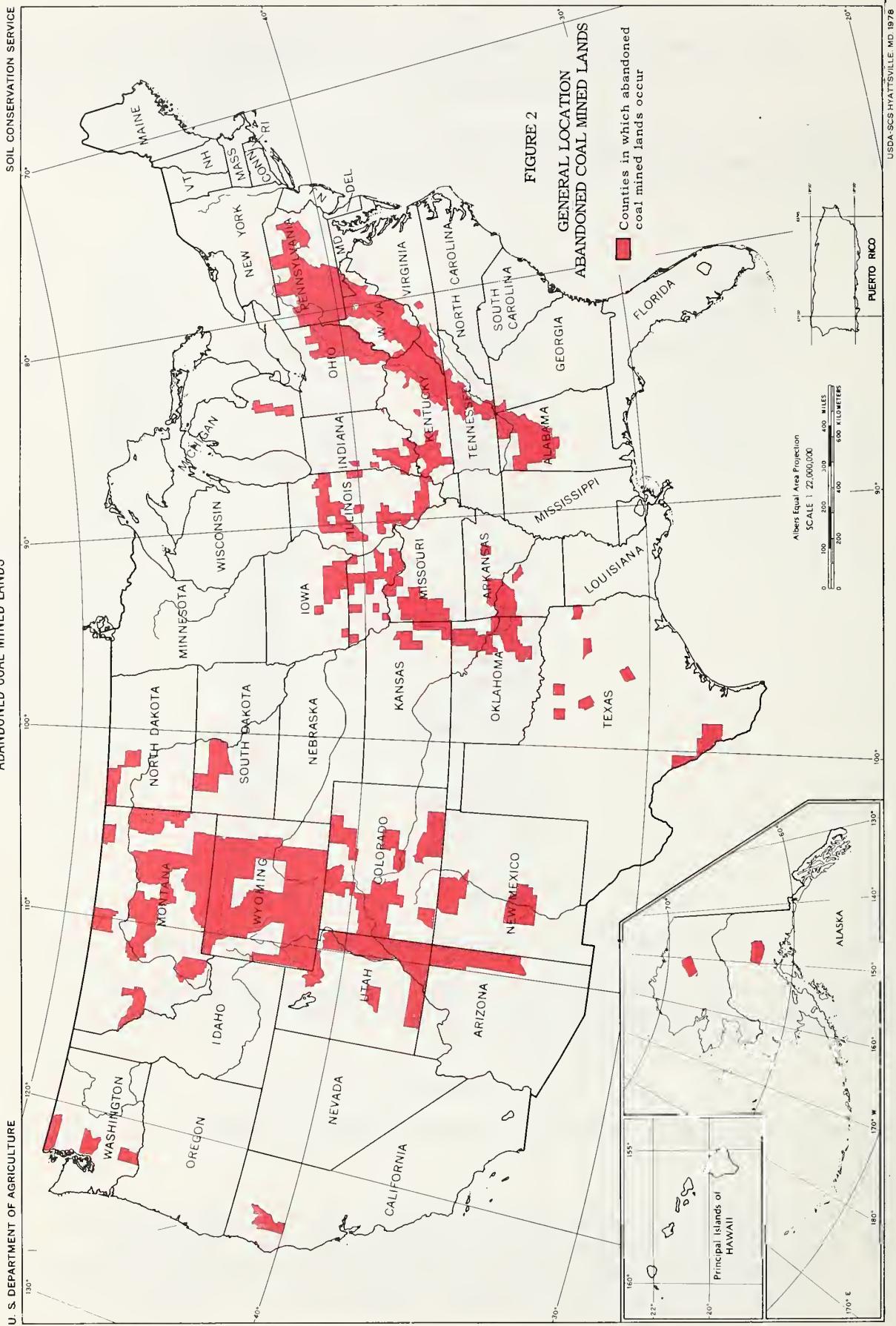
The major areas of abandoned mine lands are described below.

#### East

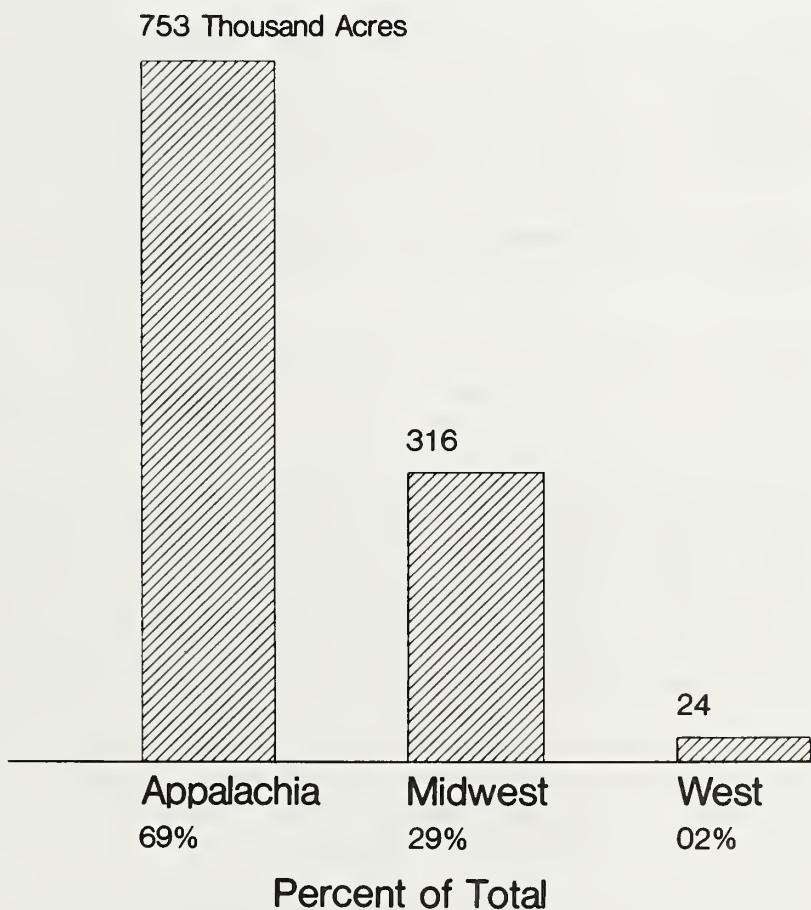
The eastern coal mining region can be divided into the Bituminous Coal Basin and the Pennsylvania Anthracite Fields. Most of the Bituminous Coal Basin lies in the Appalachian Plateau physiographic province. This coalfield extends continuously in a northeast to

U. S. DEPARTMENT OF AGRICULTURE

GENERAL LOCATION  
ABANDONED COAL MINED LANDS



**Figure 3 Extent of Abandoned Coal Mine Lands by Region**



southwest direction along the Appalachians. The Appalachian Plateau has a rolling to hilly topography dissected by streams. The Pennsylvania Anthracite Fields run in a southwest direction from the northeastern corner of Pennsylvania to a point near Harrisburg.

Climatically, the eastern region favors plant establishment and growth. The climax vegetation oak-hickory deciduous forest. For most of the area, the frost-free season ranges from 150 to 220 days. Annual precipitation ranges from less than 30 to more than 60 inches, and more than half falls in the warm season. Warm season evaporation is less than precipitation. The abundant precipitation, high humidities, and moderate cloudiness favor revegetation of disturbed areas.

#### Midwest

The midwest coalfields occur in two areas. The East Central Coalfield extends throughout north-central and southern Illinois, the southwestern corner of Indiana, and portions of western Kentucky. It is a slightly undulating plain, developed in thick deposits of glacial till, that has an average elevation of 550 feet (m.s.l.). The soils are formed primarily from glacial till plains mantled by loess. The soils that dominate the northern two-thirds of the coalfields are some of the most agriculturally productive in the world.

Forests are the dominant climax vegetation in this area. Tall grass prairie is climax in small areas. Slightly more than 89 percent of the area is utilized for crops, pasture, and forests.

The West Central Coalfields are the other area in the Midwest. The coalfields of central and southern Iowa are a gently rolling upland developed in recent glacial deposits. The coalfields of eastern Kansas and Oklahoma are unglaciated and have ridges formed by resistant sandstone layers in the coal-bearing strata. Lying at the northern end of the coalfields are the soils of central Iowa and north-central Missouri. They are deep, highly productive, dark-colored prairie soils formed from loess overlying glacial till. West of these areas and extending south along the Missouri River into northeastern Kansas and northwestern Missouri is a hilly belt of rolling or dissected plains. Soils of this belt were formed from deep loess overlying glacial till.

Soils of the coalfields in southwestern Missouri and southeastern Kansas are gently sloping to rolling plains that are underlain by and weathered from sandstone, shale, and limestone.

Annual precipitation in this region ranges from 35 to 40 inches and is well distributed throughout the year. For most of the area the frost-free season is about 200 days.

The western portion of this region lies between the short grass plains of the West and the oak-hickory deciduous forests of the East. A major portion is in the transition zone between hardwood forest and prairie biomes.

## West

The major coalfields of the West are predominantly in three areas: the Rocky Mountain division, the northern part of the Great Plains province, and the Intermontane Plateau division.

The Rocky Mountain division has a rugged topography of deeply dissected mountain uplands separated by coal-bearing intermontane basins. The coalfields are distributed discontinuously throughout the intermontane basin of south-central Montana, southeastern Utah, western Wyoming, central Colorado, and north-central New Mexico. Geologic, ecologic, and climatic conditions vary greatly within this area, yet extensive parts are similar. Annual precipitation is low, ranging from 4 inches in some of the area to more than 40 inches in the higher mountains. Average rainfall figures may be misleading because more than half of the rainfall occurs during the 3 summer months. Droughts are common all over and annual precipitation in the coal mining regions is more often below the average than above it. Extreme fluctuations in annual and seasonal temperatures are to be expected. Of the land in this division 31 percent is range, 11 percent forest, and 6 percent cropland.

In the northern Great Plains, coalfields underlie discontinuous portions of western North Dakota, northwestern South Dakota, northeastern Wyoming, and the eastern two-thirds of Montana. Elevation of the plains generally ranges from 2,000 to 3,600 feet, but it rises to over 5,000 feet east of the northern Rocky Mountain front in central Montana.

Grassland prairie is found in Wyoming, Montana, South Dakota, and western North Dakota below the elevation of the ponderosa pine zone. The most striking feature is the phenomenal flatness of the interstream areas that form a plain or alluvial slope. Temperatures vary considerably with fewer than 100 frost-free days. Average annual precipitation ranges from 10 to 18 inches, with 60 to 80 percent coming during the spring and summer portions of the growing season. The native vegetation is a mixture of midgrass and short grass prairie.

The Colorado Plateaus contain the most significant coal lands in the Intermontane Plateau. They extend throughout western Colorado, the eastern half of Utah, northwestern New Mexico, and northern Arizona. Much of the land is flat with angular steep-faced escarpments. Elevations within the region generally range from 5,000 to 8,000 feet.

## Mining methods

Three principal mining methods have been used on land needing reclamation (USDI, 1967).

Contour mining is practiced mostly where deposits occur in rolling or mountainous country. Basically, it consists of removing overburden above the bed by starting at the outcrop and proceeding along the hillside. After the deposit is exposed and removed by the first cut, additional cuts are made until the ratio of overburden to product brings the operation to a halt. This method of mining creates a shelf or bench on the hillside. The inside is bordered by a high wall that may range in height from a few feet to more than 100 feet. The opposite or outer side is a rim. Below it there is frequently a steep slope that has been covered by spoil material cast from the hillside. Where the original slope is too steep, the overburden may be used to backfill the cutout area. Contour mining is practiced widely in the coalfields of Appalachia. (See figure 4.)

Area strip mining usually is practiced on relatively flat terrain. A trench or "boxcut" is made through the overburden to expose a portion of the deposit that is then removed. As each succeeding parallel cut is made, the spoil (overburden) is deposited in the cut just previously excavated. The final cut leaves an open trench as deep as the thickness of the overburden plus the coal removed, bounded on one side by the last spoil bank and on the other side by an undisturbed high wall. Area stripping, unless graded or leveled, resembles the ridges of a gigantic washboard. (See figure 5.)

Deep mining limits surface disturbance by extracting coal and associated waste material through a shaft. The waste material is usually separated on the surface and deposited as gob or slurry.

## Conditions after mining

During surface mining operations, the strata of materials over the coal seam are removed and then deposited, in most cases, as a heterogeneous, disorganized mass referred to as spoil. The resulting spoil contrasts sharply with the physical and chemical nature of normal soils that have evolved by more orderly processes. Spoil from abandoned mines has characteristics that present major problems. Some of these problems that are related to reclamation programs are described in the section on toxic spoils.

## Erosion and sedimentation

Erosion and sedimentation produce some of the worst environmental effects of unreclaimed mine land. (See figure 6.)

Erosion and the resulting sedimentation contribute to the exposure of toxic spoil, onsite and offsite water pollution, and an unattractive landscape. Erosion rates depend on the type of mining, topography, rainfall, the type and amounts of vegetation that volunteer onto the abandoned mine land, and the age of the spoil. The rate of erosion is much more rapid on freshly placed spoil. Land abandoned for a long time may erode less rapidly because small and large stones accumulate on the



Figure 4. Contour Mining



Figure 5. Area Mining



EROSION



SEDIMENTATION

Figure 6. Erosion and sedimentation - two major problems caused by abandoned mine land.

surface that has been exposed by erosion and may produce a shingling effect. In addition, spoil becomes more compacted as time passes and is less subject to erosion.

A 1967 estimate indicated that approximately 40 percent of all surface-mined land had eroded enough to form rills and some gullies. On 400,000 acres, gullies more than one foot deep have been formed. These gullies are frequently associated with long slopes (USDA, 1967).

Estimates of erosion from unreclaimed mine land vary from a few tons per acre to rates in excess of 300 tons per acre. Erosion resulting from area stripping is comparable to that associated with contour mining. In both types of mining a large percentage of the sediment is retained in depressions on the sites (Haynes and Klimstra, 1975).

A study conducted in eastern Kentucky (Plass, 1966) indicated that a partially stripped watershed had an average erosion rate of 5.9 tons per acre, per year. In comparison, the unmined watershed had an average erosion rate of 0.7 tons per acre, per year. Ninety-seven percent of the erosion in the partially stripped watershed was attributed to the stripmined area, even though it amounted to only 6.4 percent of the total watershed area.

#### Toxic spoil

The composition of the surface layer of strip mined land (spoil), has been described by Chapman (1944) and Limstrom (1953). The spoil from stripped land may vary from the usual clays and silts with small particles to massive limestones and sandstones weighing several hundred pounds. Pyritic materials such as iron pyrite ( $FeS_2$ ) occur as crystals throughout much of the shale and sandstone or as fairly large concentrations immediately above or within the coal seam. Upon exposure to air and moisture, these materials oxidize and release chemicals that lower the pH and may create toxic conditions (Peterson and Nielson, 1973). The chemicals released consist almost entirely of mixed sulphate salts, originating as iron sulphate and sulphuric acid produced by the oxidation of the pyritic materials. Additional reactions, triggered by the presence of sulphuric acid on adjacent fragmented rock, release into solution metallic elements such as calcium, magnesium, aluminum, manganese, sodium, and potassium. In some cases, they are released in toxic concentrations. Calcareous rocks and spoil material may yield natural sulphates of calcium and magnesium, while acidic rocks and spoils yield high sulphates of aluminum, iron magnesium, and other irons (Struthers, 1962). Soluble aluminum is considered the most common toxic element in acid spoils (Coleman et al., 1958). Soluble aluminum increases in spoils as the acidity increases. This occurs because clay minerals are unstable in the presence of hydrogen ions (i.e., low pH). The hydrogen ions cause a breakdown of the clay and the release of aluminum in solution (Miller, 1965).

The pH of soil reaction influences the life function of organisms, availability of plant nutrients, and physical properties of spoil. An additional effect of low soil pH is the fixation of some insoluble nutrients. An Ohio study (Riley, 1963) indicated deficiencies in 57

percent of the tests for nitrate nitrogen, in 76 percent of the tests for ammonia nitrogen, in 80 percent of the tests for phosphorus, and in 72 percent of the tests for potash.

#### Water pollution

Surface water quality is damaged when silt, sediment, and chemical pollutants move from the mined areas into surface water. While damages such as denuded land, loss of wildlife habitat, and destruction of soil are usually associated with the immediate mining area, the effects of water pollution may be apparent many miles from the mining operation. Extensive reaches of streams may be left unsuitable for domestic and industrial water supplies and for agricultural uses such as irrigation. Fish and other aquatic life may be destroyed, and polluted water draining from surface mines may cross adjacent lands, destroying crops and trees and ruining wells and lakes. Water degradation from abandoned coal mine lands occurs throughout the United States wherever these lands exist, however, the greatest water pollution problem is in the East. Data indicate that approximately 6,000 miles of stream and 68 reservoirs have been adversely affected by surface mining (Spaulding and Ogden, 1968). Pennsylvania and West Virginia contained more than two-thirds of the 6,000 miles of mine-affected streams. Water quality problems may be intensified locally in the West because of lower runoff.

Acid and minerals such as aluminum and calcium are often found in high concentrations in mine water. During hydrolysis, iron hydroxide, or "yellow boy," is formed. It is an additional contaminator that coats stream bottoms. In the study by Spaulding and Ogden, a random sampling indicated that 31 percent of the sites with streams had chemical precipitants on the stream bottoms and 37 percent of the streams had discolored water. Silt and sediment pollution is common from all surface mining. As water flows over loose soil or rocks, it picks up and carries small particles. These settle out in watercourses causing additional problems.

Spaulding and Ogden (1968) found that 15,000 acres of water impoundments in 20 States could provide suitable fish and wildlife habitat if acid pollution were sufficiently reduced. About 97 percent of the acid pollution in streams and 63 percent in impoundments resulted from coal mining operations.

The U.S. Public Health Service estimated in 1962 that 3,200,000 tons of acid were discharged annually into streams from active and abandoned underground and surface mines in Appalachia. Much of the acid is neutralized soon after it enters the stream system. A residual acid load in excess of 300,000 tons a year is not neutralized until it reaches the larger streams of the region.

USDI studies (1967) indicate that sediment is a problem primarily associated with inadequate plant cover. They also showed that of 14,000 miles of stream channel affected by surface mining, 7,000 miles of channel had their water-carrying capacity significantly reduced. The capacity was moderately reduced along 4,500 miles. However, excess sediment from mine activity was not found in small streams that were more than 2 miles

from the mined area. On 98 percent of the surface-mined land in Appalachia, where contour strip mining is common, storm water control is inadequate to prevent erosion, sediment, or flooding.

### Esthetics

Generally, the appearance of abandoned mine land is esthetically unpleasant. The esthetic degradation of land is not limited to the mined area. Frequently, the offsite damage caused by mining degrades the appearance of an entire area. (See figure 7.) An example is the "yellow boy" that discolors the bottom of streams.

### Ground water

Pollution of subsurface or ground water by surface mining in the Appalachian coalfields is an enormous problem (Spaulding and Ogden, 1968). More than 75 percent of the water discharging from deep mines in the area is seepage from surface mines. The water is collected in surface mines and, in many cases, percolates through fractures into deep mines. Once in a deep mine, it runs along the drifts of discarded spoil materials and picks up chemicals and acid.

Other instances where water quality and quantity have been severely affected are in pit-type operations where the surface water collects and enters the ground water. Silt and sediment are filtered out, but mineral and radiological pollution may enter.

### Special problems

Abandoned mine land has many unique or special problems. These include the waste-processing areas associated with deep mining, tipple sites, mine roads, and slides from surface mining. The U.S. Forest Service examined erosion on mine access roads and found that the soil loss rate for a sandy silt road was 2.6 inches per year (Weigle, 1965). Frequently, these problems occur in relatively small areas. However, because of their physical characteristics, they are major reclamation concerns.

The instability of spoil in the mountainous area of the East is another special problem. A study of 17 slides in Kentucky (Weigle, 1965) showed that water seepage into slopes affected their stability in two ways. First, water entering the space between soil particles displaces the water that is already present, thereby lowering the surface tension of the soil. Second, water entering the ground always raises the water table and thereby increases the pore water pressure. This, in turn, lowers the shearing resistance of the soil. Studies by the USDA (1962) indicate that massive slides are a problem on about 3,600 miles of slopes left by contour mining, especially where the subsoil is unstable. Slides often enter streams and even block channels. Slides of this size occur on about 10 percent of the total mileage of outer slopes.

Surface temperature is another special problem on abandoned mine land that is not immediately vegetated. Temperature measurements of surface mine spoil indicate that heat injury to plants and seedlings commonly



AERIAL VIEW



CLOSEUP

Figure 7. The degraded appearance of abandoned mine land.

occurs on bituminous material. The threat of injury by high temperatures is especially serious on black bituminous coal and black organic shales (Deely and Borden, 1969).

#### The need for revegetation

A large percentage of abandoned mine land lacks vegetation. This is caused by toxic spoil, the lack of available seed sources, the irregular angles or exposure of the spoil, low fertility, and drought conditions.

The climates of the East and Midwest favor the rapid natural invasion of vegetation onto disturbed sites. Spoil that permits indigenous species to volunteer is most frequently invaded by trees. Until they are 8 to 10 years old, they provide poor erosion control particularly in the steep terrain of the Appalachian Mountains (Ruffner, 1978). The low rainfall in the West slows the rate of invasion of plants onto the spoil and the absence of vegetation allows extensive soil erosion by the wind.

#### Vegetation types

Abandoned mine land may be partially revegetated. The type of revegetation that occurs will be influenced by the adjacent vegetation, the characteristics of the spoil, and climatic conditions. Several years after being abandoned, the mine land may develop one of several types of vegetation.

##### Forest

Forest land is common in the East and Midwest where the climax vegetation is hardwood forest. Abandoned areas that volunteer to tree species do so because adjacent wooded areas are the only available seed source. Species that occur most frequently are short-lived volunteer trees that do little to control erosion and have limited commercial value.

##### Rangeland

In parts of the Midwest and the West where the climax vegetation is predominantly short and midgrasses, and shrubs, abandoned mine land that can support vegetation becomes partially revegetated with native species. Annuals and short-lived perennials will usually invade first. As the spoil weathers, they are replaced by longer-living plants. The vegetative cover is usually inadequate and a less stable plant community in comparison to adjacent unmined areas.

##### Mixed types

In many areas of the East and Midwest, there will be other seed sources adjacent to the abandoned mine land besides trees. In such situations, there may be an initial invasion of annual grasses and forbs, followed by perennial grasses, brambles, and weeds. If the spoil can support successional cover, woody plants will invade. In many instances, the quality of this type of cover is adequate for erosion control.

### Unvegetated areas

Because of low pH, other toxic conditions, or excessive stoniness, some areas may remain completely unvegetated for many years.

### The use of unreclaimed abandoned mine land

#### Wildlife habitat

One major use of unreclaimed mine land is wildlife habitat. The quality of the habitat varies widely. It depends on the type of mining and the extent of toxic spoil, because they determine the type and density of vegetative cover for wildlife. Approximately 30 percent of all spoil banks provide fair to good cover. About 70 percent have little or no cover because of excessive stoniness or toxic conditions (USDI, 1967).

A large number of game animals use surface-mined land including white-tailed and mule deer, squirrels, bobwhite quail, rabbits, woodcock, doves, ruffed grouse, raccoons, and wetland and aquatic animals like beaver, muskrat, mink, ducks, and geese. Nongame animals such as groundhogs, small mammals, reptiles and amphibians, and numerous nongame birds also use surface-mined lands (Haynes and Klimstra, 1975; Arata, 1959; Mumford, 1973).

#### Fish habitat

Many waters in surface-mined areas will not support fish because they are polluted by runoff from acid spoils or gob piles (USDI, 1967; Haynes and Klimstra, 1975). However, strip mine lakes with a pH not less than 6.0 that are large and deep enough can support a good quality sport fishery (Burner, 1973) and some have been used in commercial fish production (Alverson, 1973).

#### Recreation

Unreclaimed mine lands are sometimes used for recreation. The major uses are probably hunting and fishing, but other activities have been observed (Haynes and Klimstra, 1975). These include swimming, picnicking, camping, and waterskiing. Other activities for which mined land is suitable are recreational vehicle use, nature study and photography, hiking, and horseback trails.

#### Grazing

Unreclaimed surface mines in Eastern United States are not used for livestock grazing even though the successional cover that may have volunteered onto them may have forage potential. These areas are frequently isolated or not associated with grazing operations. In Western United States, where the climax vegetation is short or midgrasses, some grazing may occur on the mined land. However, the quality and quantity of forage production is marginal.

## Environmental Consequences

### Introduction

This section of the EIS describes the environmental consequences of implementing the selected RAM Program alternative described earlier. The environmental consequences are discussed in a general manner because site-specific impacts cannot be determined until individual applications for RAMP assistance are received from land users. SCS will conduct an environmental assessment for each RAMP application to analyze the potential environmental impacts of reclaiming a specific area of abandoned coal mine land.

#### Environmental consequences

The environmental consequences of the "no action" alternative, i.e., no funding of RAMP, are as follows:

1. Up to 5,800 acres of abandoned coal mine land would not be reclaimed and developed annually;
2. Acid mine drainage and approximately 510,000 tons of soil erosion per year would continue to impair water quality and cause sedimentation of streams and lakes;
3. There would be no increase in agricultural production from land conversion;
4. Numerous environmental benefits, such as more attractive landscapes and improved wildlife habitat, would not be realized; and
5. Public health, safety, and general welfare hazards would continue.

The cumulative environmental effects of the selected program and the alternative programs that were considered are described in Table 2 and summarized below:

#### 1. RAMP funding level:

Full funding of RAMP would reclaim an average of 5,800 acres of abandoned coal mine lands annually. Funding levels of less than \$40 million would proportionately reduce the number of acres reclaimed.

#### 2. Geographic allocation of RAMP funds:

If the \$40 million annual funding were allocated to one region only and the others were excluded, it would reclaim 5,200 acres in the East, or 7,200 acres in the Midwest, or 14,800 acres in the West.

3. Land use after reclamation:

Restricting land use after reclamation to either agriculture (cropland and pastureland) or wildlife, would result in an annual reclamation of 5,000 acres for intensive agriculture versus 5,800 acres for wildlife. (These figures are based on \$40 million annual funding.)

The environmental consequences of implementing the selected RAMP alternative are described in the following paragraphs.

Land use

Table 1 shows the status of abandoned coal mine lands by geographic region under the following conditions:

1. Premining
2. Present
3. Future with reclamation

This table shows how land use would be changed by the proposed reclamation program. The net effect on land use was applied proportionally to the acres reclaimed annually. These estimates of net changes in land use provide an insight into environmental impacts.

The selected program alternative would reclaim an estimated 87,000 to 109,000 acres (approximately 5,800 acres annually) over the 15-year life of the program when funded at the \$40 million level. This will restore about 8-10 percent of the abandoned coal mine land in the United States. Reclamation of eligible land will promote the development of the soil and water resource base by converting unreclaimed land to approximately 8,700 acres of cropland, 26,100 acres of pastureland, 35,000 acres of woodland, and 17,200 acres of wildlife land and/or noncommercial recreation land. Post-reclamation land uses are estimated to be about 5 percent cropland, 15 percent pastureland, 10 percent rangeland, 66 percent woodland, and 4 percent other.

Expected land use changes from reclamation varied greatly both between regions and within each region. (See figure 8.) The greatest land use increase expected in the East is in woodland, then pastureland, with a minor change expected in cropland. Approximately 67 percent of the abandoned mine land in the East was originally woodland before mining. However, land use after reclamation in the East is expected to be about 76 percent woodland. In the Midwest, the greatest land use increase is expected to occur in the acreage of pastureland, with woodland and cropland sharing the remainder. There were 163,000 acres of cropland mined in the Midwest, yet only 21,000 acres are expected to return to cropland following reclamation, assuming that all abandoned mine land in that region is reclaimed. (Approximately 8,700 acres will be reclaimed nationwide to cropland under the selected alternative over the life of the program.) This contrasts with the West where the greatest increase is expected in rangeland acreage with a minor increase in cropland. Most of the land that was mined in the West was originally rangeland and

Table 1 - Land use for abandoned mines: past, present, and with reclamation

Premining land use 1/

	<u>East</u>	<u>Midwest</u>	<u>West</u>	<u>Total</u>
Cropland	95,900	163,200	5,500	264,600
Pastureland	86,100	48,900	-	135,000
Rangeland	32,300	30,900	14,300	77,500
Forest land	504,300	63,100	1,600	569,000
Other	<u>33,000</u>	<u>9,500</u>	<u>400</u>	<u>42,900</u>
Total	751,600	315,600	21,800	1,089,000

Present land use 2/

Cropland	-	-	-	-
Pastureland	-	-	-	-
Rangeland	32,900	75,500	14,400	122,800
Forest land	337,700	102,700	800	441,200
Other	<u>381,000</u>	<u>137,400</u>	<u>6,600</u>	<u>525,000</u>
Total	751,600	315,600	21,800	1,089,000

Land use with reclamation 2/

Cropland	33,100	21,500	500	55,100
Pastureland	99,300	64,500	-	163,800
Rangeland	15,000	72,400	20,100	107,500
Forest land	571,200	147,700	800	719,700
Other	<u>33,000</u>	<u>9,500</u>	<u>400</u>	<u>42,900</u>
Total	751,600	315,600	21,800	1,089,000

Effects of reclamation

Cropland	33,100	21,500	500	55,100
Pastureland	99,300	64,500	0	163,800
Rangeland	-17,900	-3,100	5,700	-15,300
Forest land	233,500	45,000	0	278,500
Other	-348,000	-127,900	-6,200	-482,100

Percentage of net land use change for each 10 acres reclaimed

Cropland	+1	+2	+1	+1
Pastureland	+3	+5	0	+3
Rangeland	-1	0	+9	0
Forest land	+6	+3	0	+6
Other	-9	-10	-10	-10

1/Based on land use figures (1967 CNI) for coal-producing counties and land use figures based on land resource areas (USDA, 1972).

2/Assumptions (1) no intensive land use on abandoned mines and (2) reasoned approximations after review of Surface Mining and Our Environment, A Special Report to the Nation, U.S. Department of the Interior (1967), and (3) predominant land use before mining.

**Figure 8 Land Use Changes for Abandoned Coal Mine Lands**

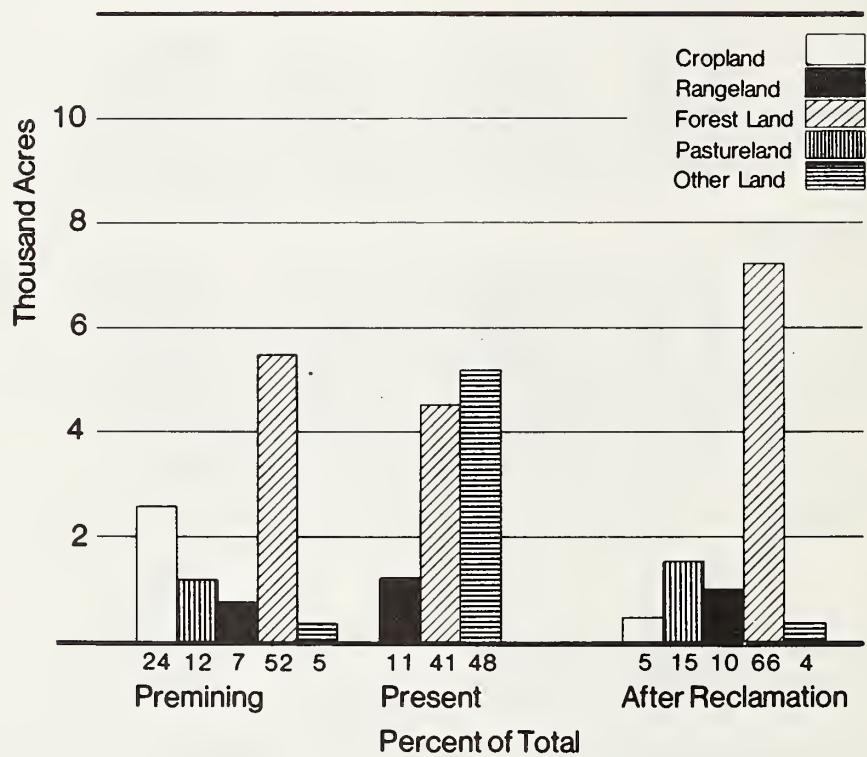


Table 2 - Annual changes due to reclamation

Unit	Level of funding 1/		Geographic distribution 2/			Land use after reclamation 3/		
	20	40	East	Midwest	West	Agric.	Selected Alternative	Fish, wildlife, & recreation
Land reclamation cost per acre 4/	\$ 6,900	6,900	7,600	5,600	2,700	8,000	6,900	6,900
Acres reclaimed	acre 2,900	5,800	5,200	7,200	14,800	5,000	5,800	5,800
<b>A. Land resources</b>								
<b>1. Major land use - acres reclaimed 5/</b>								
a. Cropland	acre 290	580	520	1,440	1,480	1,250	580	0
b. Pastureland	acre 870	1,740	1,560	3,600	0	3,750	1,740	0
c. Rangeland	acre 0	0	-350	0	8,925	0	0	0
d. Woodland	acre 1,165	2,330	2,090	1,450	0	0	2,330	0
e. Wildlife land	acre 575	1,150	1,030	710	4,395	0	1,150	5,800
<b>2. Erosion</b>								
a. Onsite reduction	tons 265,000	510,000	480,000	540,000	900,000	440,000	510,000	520,000
b. Onsite reduction per acre	tons 91	88	92	75	61	88	88	90
<b>3. Value of production 6/</b>								
a. Cropland	\$ 35,500	71,000	43,200	264,600	116,600	152,800	71,000	0
b. Pastureland	\$ 41,100	82,200	49,100	187,100	-	177,100	82,200	0
c. Rangeland	\$ -	-	-1,600	-	39,400	-	-	0
d. Woodland	\$ 12,200	24,500	21,900	15,200	-	-	24,500	0
e. Wildlife land	NM	NM	NM	NM	NM	-	NM	NM
f. Total	\$ 88,800	177,700	112,600	466,900	156,000	329,900	177,700	NM
g. Value per acre	\$ 31	31	22	65	11	66	31	NM

Unit	Level of funding 1/		Geographic distribution 2/			Land use after reclamation 3/		
	20	40	East	Midwest	West	Agric.	Selected Alternative	Fish, wildlife, & recreation
4. Net income 7/								
a. Cropland	\$ 14,500	29,000	14,600	121,000	74,000	62,600	29,000	NM
b. Pastureland	\$ 19,100	38,300	34,300	79,200	-	82,500	38,300	NM
c. Rangeland	\$ -	-	-1,700	-	45,000	-	-	NM
d. Woodland	\$ 10,500	21,000	18,800	13,000	-	-	21,000	NM
e. Wildlife land	NM	NM	NM	NM	NM	-	NM	NM
f. Total	\$ 44,100	88,300	66,000	213,200	119,000	145,100	88,300	NM
g. Net per acre	\$ 15	15	13	30	8	29	15	NM
B. Water resources								
1. Runoff								
a. Percent reduction %	39	39	40	44	46	34	39	.43
b. Reduction acre-inch	.42	.42	.40	.36	.37	.36	.42	.46
2. Flooding	SE	SE	SE	ME	ME	SE	SE	SE
3. Water quality	HE SE	HE ME	HE SE	HE ME	HE ME	HE SE	HE ME	
4. Surface water								
C. Cultural resources								
1. Land values								
a. Improved tax	Base From To	\$ 150 300	\$ 300	130 260	300 600	80 160	290 580	150 300

Level of funding 1/	Geographic distribution 2/			Land use after reclamation 3/							
	Unit	20	40	East	Midwest	West	Agric.	Selected	Alternative	Fish, wildlife, & recreation	wildlife, & recreation
<u>2. Quality of life</u>											
a. Employment											
1) Construction man-yr	1,400	2,800	3,200	2,700	2,400	2,800	2,800	2,800	2,800	2,800	2,800
2) Agriculture 8/ man-yr	20	40	40	110	15	65		40			NM
b. Income											
1) Construction \$ (000)	7,600	15,300	17,500	14,900	13,300	15,300					
2) Agriculture 8/ \$ (000)	105	210	200	530	80	315					
<u>3. Esthetics</u>											
a. Visual quality	NE	SE	SE					SE	SE	SE	SE
b. Health & safety	NE	ME	ME	SE	SE	SE	ME	SE	SE	SE	SE
<u>4. Recreation</u>											
a. Esthetics	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
b. Fish, wildlife, & recreation	ME	ME	ME	ME	ME	ME	ME	ME	ME	ME	ME

1/ Funding (in millions of dollars) distributed nationwide to all eligible land uses.

2/ \$40 million distributed to only one region but among all land uses.

3/ \$40 million distributed among all regions but only one type of land use after reclamation.

4/ The total cost to reclaim one acre.

5/ The net annual change expected to result from reclamation.

6/ Increased production multiplied by "current normalized prices," Agricultural Price Standards, WRC, October 1977.

7/ Value of production minus production cost per acre (exclusive of land reclamation costs).

8/ Annual rate of increase.

9/ Estimated impacts are probably overstated because they are based on national economy multipliers, (USDA, 1970); However, relative regional differences are identified through a weighting process (USDC, 1977).

NM-Not measured, NE-Not effective, SE-Slightly effective, ME-Moderately effective, HE-Highly effective

is expected to return to range use after reclamation. These land use increases represent the net effect of reclamation and reflect regional differences in climate, soils, and agricultural operations.

It is estimated that of each 10 acres reclaimed, one acre would be cropland, three acres pastureland, and six acres forest land. (These figures are based on a weighted average of the number of acres of disturbed land in the three regions.) Obviously, the influence of the greater acreage of abandoned mine land in the East is reflected in this estimate. Hence, the large number of acres reclaimed to woodland. It is further expected that part of the land reclaimed to woodland and rangeland will be used by wildlife.

#### Soil erosion

As used in this statement, soil erosion consists of erosion caused by both water and wind. Wind erosion is a significant factor in the Western United States.

Regional variations in climate, soil, type of spoil materials, and geomorphic settings limit the use of average figures to estimate erosion rates. However, figures that are representative of soil erosion conditions on abandoned coal mines were used to estimate the program's effects on erosion.

The following SCS estimates were used to calculate the RAMP's impact on soil erosion:

<u>Use</u>	<u>Representative annual erosion rate (tons per acre)</u>
After reclamation	
Rangeland.....	4
Cropland.....	5
Pastureland.....	3
Woodland and/or wildlife land.....	2
Before reclamation	
Mine spoil that has been partly reclaimed by natural or artificial actions.....	10
Unvegetated or unprotected mine lands:	
East.....	100
Midwest.....	75
West.....	60
Land intensely disturbed by mine activity including haul roads, tipple sites, dumps, gob piles, etc.	

East.....	150
Midwest.....	110
West.....	90

Stabilizing areas affected by mining will significantly decrease soil erosion. The annual nationwide decrease in soil erosion is estimated to be 510,000 tons.

Reclamation activities will increase short-term erosion until vegetation becomes established. This would last approximately 1 to 3 years in the East and Midwest and 3 to 5 years in the West.

#### Storm water runoff

Restoring mine areas will significantly affect storm water runoff. Storm water runoff is considered to be that portion of rainfall that exceeds the soil infiltration rate. Reclamation would affect surface runoff by changing or improving ground cover. Other factors that would affect surface runoff are: (1) applied conservation practices that control runoff and (2) the soil's ability to absorb water.

The amount of runoff from abandoned mine land was estimated before and after reclamation.

SCS procedures were used to estimate direct runoff (USDA, 1972). The type of vegetative cover was based on the projected land uses shown in table 1. The dominant hydrologic soil groups were identified on the basis of the land resource areas where the abandoned mine land was located (Dougherty and Holzen, 1976).

The analysis showed that storm runoff from 2.5 inches of rainfall could be reduced by 40 percent for the total area reclaimed. A 2.5 inch rainfall was used in all runoff determinations because it is the equivalent of the average annual storm in the East and Midwest. The average annual storm is smaller in the West, but this figure was used for parallel comparison. The reduction in runoff decreased rapidly for larger storms.

How different versions of the program affect runoff is shown in table 3. The average nationwide reduction in runoff from abandoned mine land would be 39 percent after reclamation. Reclamation would reduce runoff from a storm of 2.5 inches by an average of .42 inches per acre. Reclamation of 5,800 acres per year will reduce storm water runoff by approximately 200 acre-feet.

#### Flooding

Reclaiming mined land would reduce direct runoff from smaller storms but would have less effect on runoff from larger storms. How reclaiming abandoned mine land affects flooding depends mainly on the infiltration rate of soil material, depth of the material, retention measures installed, and storm characteristics. Practices that would be used in resource management systems to reclaim mined land would not reduce surface runoff significantly during larger storms. However, an exception is noted in a study made by the U.S. Forest Service in Appalachia that compared mined

Table 3 - Impacts on storm runoff

Runoff characteristic	Funding (millions)		Program components			Land use after reclamation	
	\$0	\$20	Geographical District		Agriculture	Fish, wildlife, rec.	
		\$40	East	Midwest	West		
*CN before reclamation	83	83	83	82	83	79	83
*CN after reclamation	75	75	74	76	70	76	74
Percent reduction in runoff 1/	39	39	40	44	46	34	43
Reduction in inches 1/	.42	.42	.40	.36	.37	.36	.46
Reduction in acre-feet 1/	100	200	170	210	450	150	220
Acres treated	2,900	5,800	5,200	7,200	14,800	5,000	5,800

1/ Based on a hypothetical storm of 2.5 inches of rainfall

(\*) CN = Hydrologic curve number based on soil and vegetative cover

and unmined areas and found a reduced peak of surface runoff during larger storms on mined areas (Curtis, 1977). These mined areas had large quantities of broken rock that created storage space for water.

Estimates on runoff reduction from implementing RAMP indicate that there would be only a slight effect on downstream, flood-prone locations because of the number and distribution of acres that would be reclaimed.

#### Ground water

The potential impact of RAMP on ground water is site-specific. Conservation practices that increase infiltration could increase ground water recharge. If the increased recharge encounters toxic substances in the soil, ground water pollution may occur.

The pollution could deteriorate ground water locally and adversely affect wells. If polluted ground water emerged in streams as base flow, surface water quality would deteriorate downstream from the reclaimed site.

In areas where increased infiltration could lead to ground water pollution, surface reclamation methods could direct runoff from recharge areas and conduct it safely downstream. This technique has been used on the Campbell Run Watershed, Allegheny County, Pennsylvania, where reclamation methods were designed to minimize infiltration (Dougherty and Holzen, 1976). This study showed that reclamation, in concert with other changes in surface and subsurface drainage patterns, caused a 43 percent reduction in acid mine drainage.

The effects of the program on ground water quality and quantity would be limited. Careful assessment of the hydrologic system as part of the environmental assessment should limit any adverse effects that program actions might have on ground water.

#### Surface water area

The quantity of surface water that the program would affect is difficult to measure because such effects would be site-specific.

Reclamation under RAMP would increase the length of unpolluted streams. Water surface area might decrease slightly because strip mine pits that presently hold water may be refilled during reclamation. These pits sometimes contain poor water and are limited in their ability to support aquatic life. If compatible with planned use, pits that contain water of good quality can be preserved as part of the reclamation effort.

#### Water quality

Degraded water quality frequently accompanies strip mining. Changes in hydrologic flow patterns that result from mining alter the quantity of water passing through various parts of the hydrologic system. The disturbance, crushing, and reduction in size of earth materials that occurs during mining produces fresh surfaces. These surfaces decompose

chemically and contribute to the mineralization of ground and surface waters. Highly mineralized, low pH waters are common because of the breakdown of pyrite minerals in coal-bearing strata and associated rocks. Large amounts of suspended sediment from the erosion of these areas cause pollution and increase turbidity.

Reworking of spoil material during the reclamation process can frequently provide a fresh chemical source and this temporarily increases pollution problems. Revegetation allows the chemical load of the materials to be reduced with time (Riley, 1963). Diverting water from areas of toxic spoils will reduce the effects of mine acids on downstream waters.

The reduction in sediment from a mine reclamation program is difficult to quantify because of systematic variation in the sediment delivery system. Reduced erosion would decrease sediment yield, damage, and pollution in downstream waters. The reduction in sediment is not directly proportional to the reduction of erosion because of differences in watershed geomorphology, instream channel deposits, and the hydraulic efficiency of the delivery system. However, reclamation plans would significantly decrease sedimentation by decreasing erosion.

Sediment yields from watersheds affected by mining are generally high. The U.S. Geological Survey reports an annual sediment yield of 1,900 tons per square mile from a mining-affected watershed in the Beaver Creek Basin (Collier et. al. 1970). This compares with a yield of 25 tons per square mile from an unmined part of that area.

Reclamation activities reduce sedimentation rates downstream from the reclamation area. Studies by the SCS in Kentucky have reported that 3 years after reclamation, the sediment yield to a drainage basin was reduced to one-sixth of the prereclamation yield (Everett et. al., 1974).

Reclamation plans under RAMP will generally improve water quality. The effects depend on the size of the area being treated and the funds available. The effects will be locally significant but will decline as the drainage area increases relative to the treated area. Water quality could deteriorate locally for several years after the reclamation period because of the disturbance of mine spoils. Sediment-related pollutants are more readily decreased by reclamation activity. Care will be exercised in assessing and analyzing each site to ensure that treatment will have positive effects on stream water quality. The overall effects of RAMP on water quality are positive. Sites where reclamation actions could deteriorate water quality will be identified during assessment and appropriate treatment will be used to improve water quality. Water quality improvement would be one of the principal benefits of this program.

#### Wildlife habitat

RAMP will affect fish and wildlife by changing: the amount, distribution, kind, and quality of habitat. This would be done by: (1) land use changes, and (2) the establishment and maintenance of conservation practices to (a) control erosion and provide for sustained use of the resource base, and (b) further improve the quality of the environment.

Unreclaimed or inadequately reclaimed surface-mined land provides only low quality fish and wildlife habitat. Therefore, any reclamation program that restores the land will significantly benefit fish and wildlife. The Fish and Wildlife Service has estimated that reclaimed surface-mined areas can support five times as much hunting and fishing as unreclaimed land. If lands were developed specifically for hunting and fishing, use would be increased eight times (Spaulding and Ogden, 1968). Reclamation to any eligible land use according to SCS standards and specifications will ensure a wildlife habitat base of greatly improved quality and increased diversity.

Eligible land may be reclaimed for cropland, pastureland, hayland, rangeland, woodland, non-commercial recreation land, and wildlife land. Each of these uses provides critical elements for wildlife habitat such as reproductive cover, nesting cover, escape cover, food, and water. The selected alternative will encourage a mix of land uses for reclamation sites. This will create a diversity of wildlife habitat.

Critical habitat elements on cropland include food in the form of green plant parts, grain and weed seeds, and cover provided by growing crops or their residues. Cover is also provided by fence rows, field borders, waterways, or odd areas within or around the crop field. Conservation practices normally applied to cropland to improve habitat quality are: minimum tillage methods that leave crop residues for wildlife use; practices that provide nesting and roosting cover such as grass field borders, grassed waterways, strip cropping, or vegetated terraces; and those practices that provide woody cover or travel lanes such as field windbreaks.

Grassland, including improved pasture, native pasture, and hayland, furnishes nesting cover, roosting cover and food in the form of seeds, stems, and the foliage of legumes and grasses. Conservation practices applicable to grassland are pasture and hayland management to maintain fertility, restrict use of pasture plants to specified minimum heights, and control invading plants. Pond or spring developments that provide livestock water also benefit a variety of wildlife species.

Rangeland has a wide variety of naturally occurring grasses, forbs, and shrubs that furnish food and cover for both wildlife and livestock. Conservation practices for rangeland are those that maintain plant species composition, vigor, and grazing height, such as deferred grazing and proper grazing use; and those that increase the carrying capacity of range, such as burning, brush management, and seeding of desired plants.

Critical habitat elements in forest land are trees that produce nuts, fruits, and seeds; vines and shrubs; tree cavities or other den sites; openings vegetated with a variety of grasses and forbs; and water (springs, seeps, waterholes, or streams). Conservation practices applied to forest land include harvest cutting, thinning, and timber stand improvements that improve the species and age composition of the timber stand and protect active den trees or important food-producing trees. Essential treatment of forest land also includes protection from wildfire and from overuse by livestock.

Wildlife land can include wetlands plus any of the land uses discussed above if they are managed primarily for wildlife habitat. The conservation practices applied to wildlife land can include any of those applicable to other land uses, plus a number of practices designed specifically to create or improve wildlife habitat. These include, but are not limited to, planting food plots of grains or legumes, building wildlife waterholes, planting trees or shrubs for additional cover, and improving or creating wetlands.

Table 2 shows annual land use changes due to reclamation under the selected alternative and other program alternatives that were considered. An average of 5,800 acres will be reclaimed annually under the selected alternative. This will result in 5,800 acres of diversified habitat, with approximately 1,150 acres managed exclusively for wildlife. The remaining 4,650 acres will receive basic conservation treatment guaranteeing an improved level of habitat quality over prereclamation conditions.

#### Production returns

Reclaiming abandoned mine land for agricultural production would be a beneficial impact. The extent of the impact would be determined by the number of acres reclaimed to cropland, rangeland, pastureland and woodland; the production from this land; and the economic return from production.

How the economic impact is affected by the selected program alternative is shown in table 2.

Typical commodities were selected by region for each land use and an estimated yield for the reclaimed land was assigned. This yield was multiplied by the net increase in acres in that land use generated by the reclamation program. The economic value of each was then computed using estimated current normalized prices (U.S. Water Resources Council, 1977).

The selected program will create additional capacity to produce agricultural and forestry products with an estimated value of \$178,000 annually. It is expected that this additional capacity will have nominal effects on aggregate market supply in either periods of shortages or surpluses. The ratio of additional cropland created by RAMP to total acres of cropland nationally is  $2.0 \times 10^{-5}$ .

The net increases in production for the selected alternative and other alternatives are shown in table 2. These production increases are shown for each land use. Although the assessment ratio and the millage per thousand for each geographic region are unknown, it is possible to estimate the income-producing potential of the land from estimated values of net income per acre. Theoretically, the tax structure is directly related to the value of the land. The net income-capitalization approach is one of many ways to estimate land values. Table 2 displays the capitalized net income per acre for two levels of return. A lower value per acre is capitalized at 10 percent interest and the higher value is capitalized at 5 percent interest. The selected RAM Program will increase land values on approximately 87,000 acres from \$150.00 to \$300.00 per acre on the average. These land values are associated with

agricultural production only. The net income-capitalization approach to land appraisal yields figures that are generally less than those from the market value or comparative approach. This is because land sometimes sells at values higher than its income-producing potential.

Most of the land expected to be involved under RAMP is privately owned. Upon sale of this property, the increase in land values would become subject to capital gains tax.

#### Income and employment

RAMP will provide increases in output in both the construction industry and in agriculture. The increases in output, resulting from changes in final demand, will generate changes in income and employment. These changes represent the following items (AEC Tech. Pub., 1971):

1. Direct effect - the initial effect provided by the increase in output.
2. Indirect effect - the influences that a change in output in one sector will have on the rest of the economy.
3. Induced effect - the effects that result from changes in household consumption expenditures as income changes.

Table 2 displays employment and income changes for the selected program alternative and other alternatives considered. These are based on published multipliers that help estimate the spinoff effects of expenditures (USDA, 1970) and are adjusted for program alternatives using output multipliers by region (USDC, 1977). The estimated impacts are overstated because they are based on "national" economic multipliers. However, relative regional differences are identified. The income and employment changes shown include only the direct and indirect effects as defined above. If the induced effect had been included, the estimated impacts would be much greater.

The increase in annual employment resulting from spending \$40 million on construction will provide an estimated 2,800 man-years under the selected program alternative. The employment effect generated by the increase in agricultural output will be an increase of 40 man-years. The income effect is represented by increases in household income that occur when changes in output result in changes in final demand. It is estimated that additional annual household income created by RAMP would be greater than \$15.5 million. This estimate includes only direct and indirect multiplier effects.

There are two major differences between the employment and income effects generated by construction and agriculture. Construction effects are contingent upon annual funding, while agricultural effects are constant over time once an acre has been reclaimed. Consequently, the agricultural effect is actually a "rate of increase" and is cumulative through the life of the program. When additional acres are no longer reclaimed, the employment and income effects become constant.

The effect on employment and income resulting from the increased cost of coal was not evaluated.

Another potential economic impact on program participants is the tax liability of the land user; if the cost-share portion provided by RAMP is determined to be taxable income. A ruling by the Commissioner of the Internal Revenue Service has been requested.

The economic benefits are insufficient to offset the costs of reclamation. Although certain economic benefits, both public and private, are anticipated, the primary purpose of Public Law 95-87, Section 406, is to improve the quality of the environment.

#### Esthetics

1. The visual quality of areas being reclaimed will be temporarily impaired during construction activities.
2. Shaping and grading of abandoned coal mine spoils will alter the present topography of reclaimed areas.
3. Air pollution, in the form of dust and exhaust fumes, will increase during construction operations.
4. Conservation treatment will significantly enhance the visual quality of abandoned coal mine lands.
5. Converting abandoned coal mine lands to more beneficial land uses will encourage the public and landowners to stop using these lands for disposal of trash, garbage, junked vehicles, etc. The reduction of such misuse will improve the appearance of these areas.
6. Converting abandoned coal mine areas to more beneficial land uses and applying conservation treatment will enhance esthetic values by increasing visual diversity.

Each of the above items may occur both onsite and offsite, except items 1 and 2, which are onsite impacts. Items 1 and 3 are short-term impacts. Items 2, 4, 5, and 6 are long-term environmental consequences.

#### Archeological and historical resources

It is very doubtful that significant archeological or historical resources would still exist in abandoned coal mine areas. The tremendous movements of earth and the topographic changes caused by mining would have destroyed any such resources in most cases. However, SCS will follow its published procedures (7 CFR 656) and applicable State and Federal laws concerning archeological and historical resources. The potential presence of such resources will be evaluated during the environmental assessment that is conducted for each agreement.

## Public safety

1. Stabilizing areas subject to landslides or other hazardous conditions will improve public health and safety.
2. Shaping and grading abandoned coal mine areas may, in some instances, eliminate attractive nuisances like dangerous water areas, and also reduce mosquito and vermin habitat.
3. Reclaiming abandoned coal mine areas used for trash disposal will reduce the habitat for rats and other vectors.

## Recreation

Unreclaimed surface-mined land is sometimes used for swimming, boating and waterskiing, fishing, hunting, picnicking, camping, and off-road vehicle trails. Some areas are used for fossil hunting, hiking, and nature study (Spaulding and Ogden, 1968; Haynes and Klimstra, 1975; USDI, 1973).

Land reclaimed under RAMP may be used for cropland, pastureland, hayland, rangeland, woodland, wildlife land, and non-commercial recreation land.

Factors that will affect both the type of recreation activity and the amount of use are: (1) changes in basic resources - vegetation, topography, water quality, wildlife habitat quality, and esthetics, and (2) the access granted by the landowner after reclamation, questions of landowner liability, and the landowner's attitudes toward hunting and other types of recreation. Table 4 summarizes these factors and their anticipated effect on recreation on reclaimed land. It should be noted that RAMP's impact on recreation will be limited to the small scattered parcels of land directly affected by the program.

## Relation of RAMP to other programs

The Soil Conservation Service coordinates RAMP activities with the other reclamation programs authorized by Public Law 95-87 that are carried out by the Office of Surface Mining, U.S. Department of Interior; State reclamation agencies; and Indian tribes. Coordination includes program development, development of reclamation standards, preparation of special reports, requests for funding, and related actions required to achieve coordination between programs.

The Secretary of the Interior administers all of the abandoned mine reclamation programs created by PL 95-87, with the exception of the rural lands program. The U.S. Department of Agriculture administers the Rural Abandoned Mine Program through the Soil Conservation Service.

SCS will consult with State and local reclamation committees to obtain recommendations on program operation, evaluation of applications for assistance, and public participation. Representatives of the State reclamation agency, the State soil conservation agency, and other interested agencies, groups, and organizations will be invited to participate as members on the reclamation committees.

Table 4. ---Factors affecting use of reclaimed lands  
for selected recreation activities

<u>Recreation Activity</u>	<u>Positive factors</u>	<u>Negative factors</u>	<u>Anticipated net effect of program</u>
Hunting	Increased productivity due to improved quality and diversity of habitat on all land uses. Some land to be devoted exclusively to wildlife use.	Reduced amount of surface water to attract waterfowl; some degree of incompatibility with pastureland; landowner resistance to public access.*	Positive
Fishing	Improved water quality. Greater productivity of remaining surface water. Some land devoted exclusively to fish and wildlife use.	Reduced amount of surface water; incompatible with some land uses; landowner resistance to public access.*	Positive
Nature study and photography	Improved fish and wildlife habitat, greater diversity of land uses; improved environmental quality and esthetics.	Landowner resistance to public access.*	Positive
Boating, swimming, and water skiing	Improved water quality.	Reduced amount of surface water; landowner resistance to public access.*	Negative
Picnicking and camping	Improved environmental quality and esthetics.	Landowner resistance to public access*; incompatibility with some land uses.	Negative
Recreational vehicle use	Improved environmental quality and esthetics.	Reduced land relief would provide fewer challenges, incompatibility with all land uses; landowner resistance to public access.*	Negative

\*Fear of liability, vandalism, and littering, or aversion to hunting.

## Adverse impacts that cannot be avoided

The adverse environmental impacts of RAMP that cannot be avoided are related principally to construction activities. These impacts are the short-term effects of noise, increased erosion, sediment production, construction traffic, and other construction activity. They would end once construction is finished and conservation treatment has been established.

Wildlife habitat that now occurs on reclamation sites would be temporarily lost or impaired during the construction period. Overall increases in habitat would occur after reclamation.

Incidental recreation on spoil areas may decrease locally as a result of land use conversion. An overall increase in incidental recreation will occur from the program as a whole.

## Relationship between local short-term uses and long-term productivity

The funding and implementation of RAMP through 5- to 10-year contracts will provide lasting economic and environmental benefits. These benefits will persist well past the end of the contracts. The limited length of the contracts will not prevent landowners from changing the use of their land in the interest of long-term productivity. After a contract expires, the landowners will be able to change the use of reclaimed land. However, it is anticipated that landowners would normally continue the land use established during the RAMP contract.

RAMP would benefit both the individual and the Nation. Although each RAMP contract will not be a major action, cumulatively they would provide significant benefits on a local and regional scale over the life of the project (15 years as funded by the reclamation fee assessed under Section 402(b) of Public Law 95-87). Assuming an average annual funding level of \$40 to \$50 million, the program could provide treatment for 87,000 to 109,000 acres (8 to 10 percent) of the abandoned coal mine land.

Wildlife would benefit because much of the reclaimed land would be used as wildlife habitat and any land developed for agriculture could also provide additional food and cover for certain wildlife species.

Soil erosion would be reduced by approximately 7.5 million tons during the 15-year life of the program. This reduction in erosion will result in reduced sediment pollution. As sediment pollution and toxic chemical discharge from acid mine drainage decrease, stream water quality will improve in the benefited areas. This will create increased fish habitat in downstream areas. These positive program impacts will be intensified in certain areas because the program is funded to give priority to areas with the greatest environmental damage and threats to public safety. Areas subject to landslides or other hazardous conditions will be stabilized to reduce hazards to life and property. Other social and economic benefits would come from increased tax bases, the elimination of vector habitats, and improvements in the visual quality of affected lands.

## Irreversible and irretrievable commitments of resources

Energy, technology, and raw materials used for reclamation will be irretrievably committed. The commitment of financial resources to install the reclamation plans must also be considered irreversible and irretrievable. However, some RAMP funds may be refunded by land users who violate the terms of the contract.

Land use changes cannot be considered permanent because they are controlled only during the 5- to 10-year contract period. Inasmuch as the reclaimed land use is the choice of the land user and provides continuing benefits, the reclaimed use should continue after the end of the contract period.

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This statement was prepared by an interdisciplinary team composed of the following members.

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Federal agencies and groups is gratefully acknowledged. The testimony  
and recommendations provided by the public at the five regional meetings  
are especially appreciated.

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Persons to Whom Copies of the Statement  
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(Asterisk indicates those providing substantive comments.)

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Copies of the draft EIS were also sent to attendees of public meetings held in Sheridan, Wyoming; Pinckneyville, Illinois; Morgantown, West Virginia; Hazard, Kentucky; and Washington, D.C.

Copies of letters of comment received on draft EIS.



DEPARTMENT OF THE ARMY  
OFFICE OF THE CHIEF OF ENGINEERS  
WASHINGTON, D.C. 20314

REPLY TO  
ATTENTION OF:

DAEN-CWR-P

6 June 1978

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P. O. Box 2890  
Washington, D. C. 20013

Dear Mr. Overholt:

We have completed our review of the Draft Program Environmental Impact Statement on the Rural Abandoned Mine Program (RAMP) as requested in your letter of 20 April 1978.

Although the proposed action is an environmental quality program with substantial positive environmental effects, certain individual reclamation projects that involve the discharge of dredged or fill material into waters of the United States may require a permit from the Department of the Army pursuant to Section 404 of the Federal Water Pollution Control Act, as amended.

The Soil Conservation Service should contact the appropriate Corps' District Office if a RAMP action is in the immediate vicinity of a Corps' project. This will allow the District Office to review the action's environmental assessment and insure that Corps' projects are not adversely affected by the program.

Thank you for the opportunity to comment on this document.

Sincerely,

JOHN R. HILL, JR.  
LTC, Corps of Engineers  
Assistant Director of Civil Works,  
Environmental Programs





# United States Department of the Interior

OFFICE OF THE SECRETARY  
WASHINGTON, D.C. 20240

In Reply Refer To:  
ER-78/385

JUN 9 1978

Mr. David P. Overholt  
Director, Conservation Operations Division  
Soil Conservation Service  
Room 6132-South Agriculture Building  
P.O. Box 2890  
Washington, D.C. 20013

Dear Mr. Overholt:

We have reviewed the draft statement for the Rural Abandoned Mine Program (RAMP), sent to us April 20, 1978. It is generally difficult to reach the proper level of treatment in review of a major program, particularly in the beginning stages. Your staff has succeeded and, in the process, produced a concise yet informative analysis of the program impacts. They should be commended.

We do have several concerns that should be reflected in the statement and in program implementation. These include lack of inventory data as to specific types and severity of mined coal land problems, lack of information as to how selection will be made between competing projects, omission of significant program alternatives, and lack of information as to what steps will be taken to meet SCS responsibilities under the Endangered Species Act of 1973.

The first two program priorities focus on protection of public health, safety, and general welfare; yet data as to the extent and severity of these problems are not available. There is no indication as to how much of the 1.1 million acres of abandoned coal mine lands presents an immediate or imminent threat to public health, safety or general welfare, or how much resembles that shown in figures 4, 5, and 6. There is no breakout of the acreage that would be eligible under RAMP. Identification of the more serious problems and elimination of ineligible lands will give the true parameters of the program. We realize that inventories of this scope are planned but are not implemented as yet. The statement should discuss plans for acquisition of this data and indicate how it will be utilized in carrying out the program.

Priorities for funding are treated as interrelated objectives rather than as explicit priorities for project selection established by the Act. Related to this problem is the emphasis on acres reclaimed and productivity restored rather than abatement of hazards or threats to public health, safety, and general welfare. It is not clear how the priorities will be reflected in project selection. Also, it is not indicated how selection will be made between competing projects of the same priority.

Alternatives evaluated are limited to levels of program funding, geographical distribution of projects, and post-reclamation land use. Implicit throughout the statement is the apparent assumption of "total reclamation" rather than a recognition that first priorities are protection of public health, safety, and general welfare. The following program alternatives also merit serious evaluation and consideration:

1. Concentrate program efforts on projects in order of priority as mandated by the Act.
2. Emphasize projects with highest benefits toward abatement of off-site hazards and damages.
3. Limit reclamation efforts to the levels sufficient to meet Priorities 1 and 2 rather than the more extensive reclamation that may be necessary to produce cropland.
4. An alternative incorporating all of these thoughts would be to conduct the program so as to maximize protection of public health, safety, and general welfare rather than focusing on acres reclaimed and post-reclamation land use.

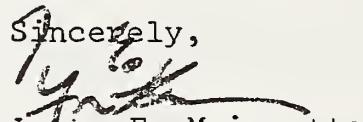
The wildlife discussion fails to recognize that certain of these abandoned lands may harbor or be of importance to endangered or threatened animal or plant species. The statement should indicate how and at what points in the program SCS will take the steps necessary to carry out its responsibilities under Section 7 of the Endangered Species Act of 1973.

This program, through cumulative actions to reclaim or improve affected lands and waters, affords an opportunity to increase fish and wildlife values over the existing conditions of abandoned mines. However, land use following

reclamation could adversely affect wildlife values. Therefore, appropriate measures should be included when implementing the Act to minimize adverse impacts of the federally-funded reclamation projects on the wildlife resource. One such measure would be for local SCS offices to coordinate specific implementation of this abandoned mine program with Fish and Wildlife Service field offices.

We appreciate the opportunity to review and comment on your statement. We will be pleased to assist your staff in the areas where we have expressed concerns. Specific comments are attached for use as appropriate in preparing the final statement.

Sincerely,

  
Larry E. Meierot+<sup>~</sup>  
SECRETARY

Deputy Assistant

Enclosure

### Specific Comments

P. iv, Summary - The number one priority for funding lists: ". . . Protection of public health, safety, general welfare . . . from any extreme danger, yet under the consequences of no action, none of these items are indicated to be affected." This gives the impression that the public health, safety, and general welfare may not be a significant item for consideration. We suggest this conflict be clarified.

Also, there does not appear to be consistency as to level of breakdown as to consequences between "no action" and program implementation (3 items under "no action," 14 under program implementation).

P. vii, Summary, last sentence - Although a site specific assessment will identify potential impacts, it must do more than that. This was recognized earlier on p. v.

P. 3, Composition of conservation plans - It is not evident whether the expedient of flooding and sealing abandoned mines has been considered. In some situations these procedures may minimize oxidation and resultant impacts on aquifers.

The statement should consider reclamation of lands affected by surface subsidence and fracturing that are related to underground mining. Changes in surface drainage, decreased use of land, and pollution of aquifers are among effects of such subsidence and fracturing..

Reclamation of lands covered by waste materials from underground mining should be more adequately addressed.

P. 7 - The environmental assessment made under the extreme danger provisions of Priority 1 should include evaluation of feasible alternatives, identification of significant environmental impacts, and possible mitigation measures.

P. 10, Fig. 2 - On the map of Alaska, one abandoned coal mine area appears to be in a large roadless area, the other almost in a national park (Mt. McKinley). This may be a result of map scale.

P. 20, Range type, last sentence - Refers to inferiority of vegetation in relation to that surrounding the spoil. We suggest that it be made more descriptive to reflect in what way it is inferior, such as ground cover, erosion control, wildlife habitat, etc. Inferiority for one purpose may be superiority for another.

P. 33 - The term, "U.S. Geological Service," should be corrected to read "Geological Survey."

P. 39, Adverse impacts - Measures such as temporary sediment traps should be considered in order to minimize sedimentation resulting from increased erosion and sediment production during construction activities.

Table 2, Annual changes due to reclamation - This emphasizes the Priority 3 objectives rather than Priority 1 and 2. Much of the tabulation is devoted to land use of reclaimed acres, value of production, net income, improved tax base, employment, and income with only a few lines devoted to runoff, water quality, erosion (limited to onsite), and health and safety (buried under Esthetics).



DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE  
PUBLIC HEALTH SERVICE  
CENTER FOR DISEASE CONTROL  
ATLANTA, GEORGIA 30333  
TELEPHONE: (404) 633-3311

June 2, 1978

Mr. James B. Newman  
Chief, Conservation Programs Branch  
Conservation Operations Division  
Soil Conservation Service, USDA  
P. O. Box 2890  
Washington, D. C. 20013

Dear Mr. Newman:

We have reviewed the draft environmental impact statement on the Rural Abandoned Mine Program. We are responding on behalf of the Public Health Service.

As a result of the proposed measures outlined in the draft, the quality of the environment as related to public health would be improved, specifically with relation to the following:

1. The reduction in sedimentation rates, thus improving public water supply.
2. The implementation of conservation practices to increase ground water recharges.
3. The stabilization of high walls or other areas subject to landslides.
4. The elimination of dangerous water areas posing threats to human safety and encouraging mosquito and vermin habitats.
5. The reclaiming of abandoned mines used for trash disposal which in turn will reduce habitats for rats and other vectors.

We feel, however, three areas of concern exist which need more commitment and discussion in the final EIS:

1. Surface and subsurface temperatures (hot spots) on abandoned refuse piles must be dealt with, and special preparation and procedures implemented to remove the potential hazards prior to esthetic reclamation.
2. Many portals to underground mines (closed) before pre-law mining present continuous pollution problems to streams and

Page 2 - Mr. James B. Newman

water supplies. As stated on page 18, water enters the overburden fractures, runs along the drifts and eventually seeps out the portals. These portals may support climax vegetation and appear esthetically finished.

3. Eliminating the disposal area for solid waste (abandoned mine sites) will modify the environment of people in the surrounding area. When this operation is begun, an adequate refuse disposal program and site should be paralleled with the undertaking.

Thank you for the opportunity of reviewing this document. Please send us two copies of the final EIS when it is issued.

Sincerely yours,

*William H. Foege*  
for William H. Foege, M.D.  
Assistant Surgeon General  
Director

UNITED STATES DEPARTMENT OF AGRICULTURE  
OFFICE OF EQUAL OPPORTUNITY  
WASHINGTON, D.C. 20250

MAY 2 1978

IN REPLY  
REFER TO: 8140 Supplement 8

SUBJECT: Draft Environmental Impact Statement for the Rural  
Abandoned Mine Program (Title IV, Section 405, Public  
Law 95-87, 30 U.S.C. 1236)

TO: David P. Overholt, Director  
Conservation Operations Division  
Soil Conservation Service

o

We have reviewed your Draft Environmental Statement for the Rural  
Abandoned Mine Program and have no civil rights recommendations to  
make.

Thank you for allowing us to comment on this statement.



JAMES FRAZIER  
Director



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D.C. 20460

7 JUN 1978

OFFICE OF THE  
ADMINISTRATOR

Mr. David P. Overholt  
Director  
Conservation Operations Division  
Soil Conservation Service - Room 6132  
South Agriculture Building  
P.O. Box 2890  
Washington, D.C. 20013

Dear Mr. Overholt:

In accordance with our responsibilities under Section 309 of the Clean Air Act, as amended, the Environmental Protection Agency has completed its review of the draft Environmental Impact Statement (EIS) prepared by the Soil Conservation Service for the Rural Abandoned Mine Program (RAMP), authorized in Section 406 of Public Law 95-87. EPA concurs with the Soil Conservation Service's conclusion that the cumulative environmental results of implementing RAMP are significant and beneficial overall. However, we are concerned about several areas of the draft EIS which require additional explanation or further consideration in the preparation of the final environmental impact statement for this program. These areas are described in the enclosed detailed comments.

As a result of our review, and in accordance with EPA procedures, we have categorized this program LO (Lack of Objections) and have rated the draft EIS as 2 (Insufficient Information). We appreciate the opportunity to review and comment on the draft statement. Should you have any questions regarding our concerns, we would be happy to discuss them with you.

Sincerely yours,

A handwritten signature in black ink, appearing to read "William D. Dickerson".

William D. Dickerson  
Acting Director  
Office of Federal Activities (A-104)

Enclosure

THE ENVIRONMENTAL PROTECTION AGENCY'S  
DETAILED COMMENTS  
ON THE  
DRAFT ENVIRONMENTAL IMPACT STATEMENT  
FOR THE  
RURAL ABANDONED MINE PROGRAM (RAMP)

General Comments

EPA has identified several major areas of concern in the draft EIS.

A. Level of Funding

The draft EIS discusses an annual RAMP funding level of \$40 million. While EPA cannot assess this amount in terms of its ultimate adequacy, it would appear appropriate to begin the program with a modest sum and to raise the funding levels in later years as experience is gained. This would avoid a rush to implement the program only in order to allocate the available monies. Such a rush could result in funding an initial program which produced little in the way of positive results because it had been entered into without adequate planning. We would recommend serious SCS consideration of limiting the first-year activities to a total of five projects (a "project" designating a single tract of land in a single State.) The projects might be allocated as follows: two in the East, two in the Midwest, and one in the West. The geographic allocation is based on hypothetical variations in sediment yield (higher in the steeper terrains) and in value to agriculture (higher in the midwestern States.)

B. Geographical Allocation of Funding

EPA believes that an important factor in determining the allocation of funding should be the projected return on expenditures. The returns are to be measured in terms of control of erosion damage (which includes conservation of soil resources) and terms of conservation and development of water resources (see § 406(a) of P.L. 95-87). We suggest that geographical allocation could be based on the projected reductions in sediment delivered to surface water systems in excess of natural erosion and on the improvement in waters affected by erosion from surfacemined land.

We have suggested, in our response to the previous issue, that initial projects be weighted in favor of the East and Midwest since steep slopes and humid climates lead to persistent erosion and since vegetative reclamation may be accomplished within shorter time frames in the East and Midwest (compared to the West). Thus the chances for measurable success in reasonable time periods appear greater in the more humid climates than in the semi-arid to arid climates of much of the western interior United States. Finally, such an allocation of funding would reflect the amount of disturbed land in each of the three geographical regions.

Finally, the draft statement lists three priorities for funding reclamation work. Title IV of the Act has six priority levels all of which fit the development of soil and water resources. The three eliminated priorities should be reinstated in the final EIS or clearly shown to be inappropriate to RAMP. These national priorities should provide SCS a basis for establishing the regional priority ranking factors referred to earlier for the programmatic statement discussions.

#### C. Program Objectives

The established program priorities and goals should be clearly linked to the administration of the program to demonstrate that the funds utilized for RAMP will maximize the effectiveness of the Federal effort to meet the objectives of the law. In the draft EIS, priorities are listed on page 1; however, no ranking of them occurs. Their influence on actual program implementation is not demonstrated. This should be discussed in the final EIS. Also, SCS should consider how to receive and process funding requests (centralized or decentralized administration) to maximize the use of the limited program funds.

#### D. Pilot Program

The complexity of land reclamation on a national scale may warrant the development of a pilot program by SCS to gain experience in this area. Such a program could help ensure adequate regulations for a program having considerable impacts if funded on a large scale. One possible approach could be the initial funding of five pilot projects as noted above. After the projects' initiation, monitoring and short-term evaluation, necessary program adjustments could be made. Wide scale implementation of RAMP could then occur. We also encourage SCS to act expeditiously on proposals that would remedy pressing public health problems. EPA believes that this basic approach deserves serious SCS consideration.

#### E. Program Implementation Schedule

The timing of the projects to be funded should be considered in the final EIS. Since there will be short-term pollution resulting from reclamation activities, the SCS should discuss in the final EIS an approach to this program that protects against unreasonable short-term impacts in local areas. For each alternative approach to RAMP, it may be useful to develop timetables for implementation which point out when program benefits and costs will occur.

#### F. State Coordination

The draft EIS does not show that the Soil Conservation Service plans to coordinate its program with State reclamation programs. EPA believes it would be useful to have Federal coordination with State programs. This would eliminate any possible duplication of effort and help make compatible all governments' work in coal land reclamation. We suggest that the SCS consider a procedure which enables proper Federal and State agencies to coordinate the selection and review of candidate projects. This is especially important to EPA since reclamation can, as noted in the draft EIS, cause additional water pollution of at least a temporary nature.

#### G. Additional Program Features

We would like to suggest that, in administering this program, SCS also develop criteria for:

- A. Determining at what point mined rural lands are considered to be abandoned.
- B. Determining and quantifying the processes causing soil or water degradation.
- C. Projecting the effectiveness of proposed reclamation.
- D. Measuring success of the reclamation activities.

## H. Post-reclamation Land Uses

EPA believes it is reasonable to include as planning criteria certain measures of reclamation success - or returns on the investment of reclamation for specific land use categories. If a particular land use category provides the potential for greater soil and water conservation, it would appear that the Surface Mining Control and Reclamation Act (P.L. 95-87) would favor this land use. If the draft EIS has properly evaluated the "representative annual erosion rate" for land uses, forest land and wildlife land would deserve highest consideration as meeting the objectives of § 406 of the SMCRA. (We suggest, however, that the SCS estimates are averages and that site-specific selections of post-reclamation land uses should depend on more detailed assessments of the projected erosional stability of this area.) The Department of Agriculture should consider § 515(b)(2) of Public Law 95-87 in assessing post-reclamation land uses.

### Specific Comments

The weighted average costs for reclamation in the three regions may be somewhat low. For example, the average cost to return an acre of Montana surfaced mined land to grazing use with 4' topsoil, 10% slopes, is \$3,807 (M. J. Watts, Staff Paper 75-24, Dept. of Economics, Montana State University, Bozeman). In addition, it is important to consider that this cost is achieved with personnel and equipment who are already on site, and are familiar with reclamation techniques effective for the particular mine site. The reclamation of orphan lands may well require methods which are far more costly due to extremely adverse conditions. It is recommended that State reclamation offices be consulted in this regard, since most have done some orphan lands reclamation. A higher cost/acre estimate would affect the number of acres projected for reclamation throughout the draft EIS.

The draft statement notes that the \$40 million annual funding would reclaim 5,000 acres for "intensive agriculture" or 5,800 acres for wildlife. EPA suggests that the difference in number of acres reclaimable for the two uses is probably greater than indicated. Surface shaping and erosion control methods would be much more extensive, and costly, for annual cropping than for wildlife habitat in permanent native cover.

- Is the figure of 5,000 acres (p.V) correct for the amount of land versus cost which will be required to reclaim both wildlife habitat and agricultural acreage?
- Definition of the term "extreme danger" (p. 1) would be very useful.
- The presentation of the conservation plan (p. 3) does not evaluate the need for geological reconstruction which is often necessary prior to any vegetative, mechanical or management practices. Terrain reshaping and soil conditioning are essential to revegetation and may eliminate various mechanical needs. The final statement should not ignore this major reclamation feature.
- In using the Federal budget figure to derive what benefits may be obtained by implementing RAMP, SCS approximates costs of land reclamation in various regions of the country. EPA feels that the reclamation costs per acre (p. 5) may be too optimistic. However, this may be offset to some degree by SCS not considering in its benefit calculations the fact that Federal money will bring additional private investment in land reclamation through the RAMP cost-sharing scheme.
- The discussion on toxic spoil (p. 17) ignores problems associated with radioactivity and trace elements. A complete regional analysis of spoil pile composition should be done to adequately address the severity of toxic spoil. Natural elements, such as those mentioned, may influence anticipated land use. In addition, compliance by the Rural Abandoned Mine Program with Sections 3004 and 4004 of the Resource Conservation and Recovery Act should be demonstrated.
- The section on water pollution (p. 17) deals with the problems in the East and is primarily limited to Appalachia. The draft statement does not address the water pollution problems of mining in the Midwest or West. This should be addressed in the final statement on a regional and a State level.
- This document indicates that the greatest water pollution problems from mining occur in the East (p. 17). However, there is no comparative data to support this. With

limited water availability in the West, any mine runoff may pose a greater threat than a similar runoff in the higher rainfall areas of the East. Substantive information is needed in the final EIS on both surface and groundwater effects of the RAMP program.

- In the Environmental Consequences section (beginning on p.22), a number of conservation practices are described for grassland, rangeland, and forest land. These practices imply a program of continuous management. Since it does not appear that any governmental entity, or the land owner, is required to carry out such practices, EPA urges that SCS design grassland, rangeland, and forest reclamation in a permanent, self-sustaining manner except in cases where the land owner desires to assume responsibility for such conservation practices.
- The section on production returns (pp. 35-36) attempts to justify reclamation expenditures by identifying potential economic benefits. The discussion revolves around crop production often due to the difficulty in quantifying water quality and wildlife benefits. However, information on increases in recreational user days and associated expenditures can be expressed and should be included in the final programmatic statement.
- The section on esthetics (p. 37) should clearly differentiate between short-term and long-term effects and on-site and off-site results of RAMP.

EPA believes that a large number of the more specific points made above may have actually been considered by the Soil Conservation Service in its development of plans for the Rural Abandoned Mine Program. However, it would be useful for SCS to compile all this information in the final EIS.

Additional information would be useful in many other areas of the final EIS. The final EIS should include the program's proposed rules and regulations cited in the draft statement. Also, it may be useful to append several documents, or pertinent sections, from which SCS draws statistical data to support its analysis. For instance, the reclamation cost figures

are drawn from Bureau of Mines Information Circulars IC-8737 and IC-8695 and a 1967 DOI report. Appending pertinent sections of these documents to the EIS will allow reviewers the opportunity to see from where SCS calculations derive and upon what assumptions they may be based. Several statements are not supported in the text at all. For instance, where do the soil erosion rate numbers come from on pp. 29-30? We believe the SCS analysis would be strengthened if all statistical data were supported and their underlying assumptions set forth as reasonably as possible.

Advisory Council on  
Historic Preservation  
1522 K Street N.W.  
Washington, D.C. 20005

May 30, 1978

Mr. David P. Overholt  
Director  
Conservation Operations Division  
Soil Conservation Service  
Room 6132 - South Agriculture  
Building  
P.O. Box 2890  
Washington, D.C. 20013

Dear Mr. Overholt:

The Advisory Council on Historic Preservation has reviewed the Draft Environmental Impact Statement for the Rural Abandoned Mines Program as authorized by the Surface Mining Control and Reclamation Act of 1977. As written, we find that the treatment of historic and archeological resources does not meet the requirements of Section 106 of the National Historic Preservation Act, as amended (16 U.S.C. 470f), as implemented by the Council's Procedures published at 36 CFR Part 800.

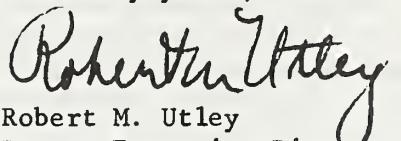
Specifically, we find that the extremely cursory treatment of historic and archeological resources on page 38 of the draft statement is an inadequate explanation of the method of identification of resources and discussion of their effect. We specifically disagree, for example, with the statement contained on page 38 that, "It is very doubtful that significant archeological or historical resources would still exist in abandoned coal mine areas." For example, tangible evidence of mining and processing techniques may be extant in such abandoned areas and would represent a contribution to the industrial archeological knowledge of the Nation. We recommend that you consult with Mr. Eric DeLony of the Historic American Engineering Record, Heritage Conservation and Recreation Service (Department of the Interior, Washington, D.C. 20240) to develop a proper methodology for identifying and evaluating these industrial resources. This section of the draft statement should be entirely re-written to reflect the current state of industrial archeology in the country in relation to coal mining practices and an indication of the manner in which the SCS will comply with the provisions of 36 CFR Part 800.

Similarly, the section on page 5 and page 38, regarding applicable environmental laws and regulations should specifically reflect the provisions of the National Historic Preservation Act and the Procedures of the Council (36 CFR Part 800).

Until an appropriate system for meeting the requirements of Section 106 and the Council procedures is developed, the Council considers the Draft Environmental Impact Statement to be deficient in its treatment of historical, archeological and cultural resources. We would be pleased to work with you in fulfilling this need.

Please call Mr. Peter Smith, Assistant Director, Office of Intergovernmental Programs and Planning, at 634-4153, for assistance in this matter.

Sincerely yours,



Robert M. Utley  
Deputy Executive Director

**TENNESSEE VALLEY AUTHORITY**

**CHATTANOOGA, TENNESSEE 37401**

268 401 Building

**June 14, 1978**

Mr. R. M. Davis, Administrator  
U.S. Department of Agriculture  
Soil Conservation Service  
P. O. Box 2890  
Washington, DC 20013

Dear Mr. Davis:

This letter constitutes the Tennessee Valley Authority's comments on the "Draft Environmental Impact Statement - Rural Abandoned Mine Program (RAMP): As Authorized by Section 406, The Surface Mining Control and Reclamation Act of 1977," as requested in your April 20, 1978, transmittal letter. To expedite the review process, these comments were telephoned to Gerald Root of your staff.

General Comments

1. At present there is nationally a lack of information on the level of improvement in water quality which can be achieved through a reclamation program such as RAMP. In order to measure the successfullness of the project in terms of water quality improvement and to provide guidance for continuing work, we suggest demonstration watersheds be selected for detail study of improvements resulting from reclamation practices.
2. A benefit associated with implementation of RAMP includes decreases in trash dumps and subsequent reductions in associated disease vectors and pests. However, there is no discussion of how reclamation will decrease rural dumping of trash. If no alternative means of disposal are provided, we assume that RAMP will supply more aesthetically acceptable dumps.
3. Recreation is identified as a land use after reclamation on page 7 (we assume a primary use) and is not considered a primary land use (page 38) in discussion of impacts. Though we generally agree with the discussions of impacts to recreational uses, we believe recreation opportunities are being overlooked with the thrust of the discussion. Reclaimed lands, particularly with a combination of reclamation "types" (forest, wildlife, pasture, etc.), offer opportunity for many types of recreational uses, including environmental education, camping, hunting, fishing, trails, etc.

Mr. R. M. Davis  
June 14, 1978

We recognize that any use of these lands is dependent on landowner desires; however, selected properties could be used for the primary purpose of recreation. Since Federal funds are being used for reclamation, it seems logical that easements or agreements with the landowner would be appropriate, in some instances, for recreation purposes. These agreements may be interim or indefinite land uses, but, in either case, would significantly add to the overall program benefits. Therefore, we recommend that recreation land uses be considered as a primary use and not merely as a benefit, if compatible, with other uses.

5. Unreclaimed land does not always produce low quality wildlife habitat. Small scale, 20-year-old revegetated orphan mines can produce very good wildlife habitat on Appalachian contour mines especially for ruffed grouse, quail, rabbits, and nongame birds and small mammals. Intensively reclaimed orphaned mines often are of lower habitat quality than naturally revegetated orphan mines. Also, foliage structure and vegetative diversity is frequently better on naturally revegetated mines.

Generally, the creation of wildlife habitat makes more sense in the steep contour mines of the Southern Appalachians than most of the other land use options with the possible exception of pasture land. However, pasture land may not be a realistic alternative in most areas due to its remote nature and the inherent difficulty and high cost associated with fencing.

Forest products from abandoned mine lands will probably not have a high commercial value due to mineral strain and the irregular growth form of the trees, at least for the first rotation.

#### Specific Comments

##### 1. Page V - Environmental Consequences

The acreage figure stated in paragraph 2 (" . . . reclaiming land only for wildlife use would yield 5,000 per year . . .") appears inconsistent with the figure given in paragraph 9 ("Improved fish and wildlife habitat on approximately 5,800 acres per year . . ."). Perhaps, a clarification of the definitions involved could explain this 800-acre difference. Any assumptions concerning the improvement of fish and wildlife habitat should incorporate the possibility of permanent loss of fish and aquatic habitat each year as ponds are drained and filled, as well as the disruption of existing wildlife in these areas.

Mr. R. M. Davis

June 14, 1978

2. Pages VI and 4 - Reduction of Government's Share

The second sentence from the bottom of the first full paragraph states that the Government's share of the cost will be reduced up to 0.5 percent per acre for reclaiming areas exceeding 120 acres.

However, the second sentence from the bottom of the last paragraph on page four states that the Government's share will be reduced by 0.1 percent per acre exceeding 120 acres. This discrepancy should be corrected.

3. Pages 3 and 4 - Provisions of Agreement

To ensure maximum benefit from the program on the reclaimed land put back into agricultural use, we recommend that the long-term agreements with landowners specify the use of best management practices as identified in an approved statewide 208 plan. In addition, we suggest that a much longer agreement (perhaps 40 years) would be necessary for forest benefits to accrue. We recognize, however, that the maximum agreement period the Secretary is authorized to enter into under the Surface Mining Control and Reclamation Act of 1977 is ten years.

4. Page 4 - Basis of Cost Sharing

While we recognize that the maximum average<sup>\*</sup> permitted to be reclaimed under RAMP is 320 acres, it should be noted that the corporations often own large tracts that greatly exceed this amount. The amount of acreage in excess of 320 acres owned by a single land user should be established and the potential effects of such ownership discussed.

5. Page 5 - Operation of the Program

An operational definition of a "restored" stream, third paragraph from the bottom, should be included in the draft.

6. Pages 9, 12, and 13 - Climate, Topography, and Land Use

The total number of acres in the coal bearing counties within the eastern and western coal fields is provided; however, no value is given for the midwest coal fields. For consistency and comparative purposes this figure should be provided.

Mr. R. M. Davis  
June 14, 1978

7. Page 18 - Water Pollution

In the third paragraph it is unclear whether the 14,000 miles of stream channel is affected by active, abandoned, or both types of surface mines.

8. Page 21 - Fish Habitat

The destruction of fish habitat by siltation should also be discussed in this section.

9. Page 30 - Soil Erosion

The draft acknowledges the fact that reclamation activities will increase short-term erosion until vegetation becomes established. Conservation practices are available to minimize erosion and sedimentation during reclamation activities, and we believe the draft should address management practices to be utilized during construction and interim phases of the program. This is especially important in lands scheduled to go back into forestry use. Because, as stated on page 20 (fourth paragraph) of the statement, it takes eight to ten years for trees to provide good erosion control.

10. Page 31 - Storm Water Runoff

We suggest that the first full sentence ("There is a larger storm frequency in the West, but this figure was used for parallel comparison.") be modified to read "The average annual storm is less than 2.5 inches in the West, but it was used for parallel comparison."

11. Page 31 - Flooding

We recommend that the following paragraph be inserted immediately after the heading "Flooding":

Reduced channel capacity due to sediment deposition creates higher and more frequent overflows. Practices that could alleviate this problem include cleaning and subsequent channel maintenance until vegetative treatments take effect.

We appreciate the opportunity to review this draft statement.

Sincerely,

*J. Clement Hardick Jr.*  
Harry G. Moore, Jr., Ph.D.  
Acting Director of Environmental  
Planning



# National Wildlife Federation

1412 16TH ST., N.W., WASHINGTON, D.C. 20036

Phone: 202—797-68

June 2, 1978

Mr. David P. Overholt, Director  
Conservation Operations Division  
Soil Conservation Service, USDA  
Room 6132-S  
P.O. Box 2890  
Washington, D.C. 20013

Re: Rural Abandoned Mine Program

Dear Mr. Overholt:

I enclose comments of the National Wildlife Federation on the SCS Draft Environmental Impact Statement on the Rural Abandoned Mine Program, authorized under Section 406 of the new Strip Mine Act (PL 95-87). These comments were prepared on our behalf by Russell Boulding, Bloomington, Indiana. As you will see, six principal points are made:

- 1) SCS technical guidelines should be modified to accommodate the special problems attendant to this program. The impact statement should set forth the mechanism for determining and making appropriate modifications.
- 2) Reclamation cost figures require better documentation. The program may require some cutting back in (territorial) magnitude because of the large expenses in reclaiming especially troublesome areas.
- 3) There should be more examination given to the manpower constraints under which SCS is operating, and consideration of alternative ways to meet manpower needs.
- 4) There should be more discussion of potentially damaging consequences from reclamation, and how best to identify those situations where adverse impacts may possibly outweigh gains.

Mr. David P. Overholt

June 2, 1978

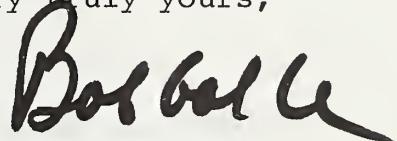
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5) The relationship between reclamation and increased tax burdens should be better scrutinized, and means of avoiding inadvertent disincentives to reclamation considered.

6) The issue of coordination with other (e.g., state) reclamation programs should be given more attention.

We appreciate the opportunity to present these comments to you.

Very truly yours,



Robert J. Golten  
Counsel

RJG:ks  
Encl.



# National Wildlife Federation

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## COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT, RURAL ABANDONED MINE PROGRAM

Prepared by Russell Boulding for the  
National Wildlife Federation

In general the Draft Environmental Statement (DES) on the Rural Abandoned Mine Program (RAMP) effectively identifies the advantages and disadvantages of alternative program possibilities. The environmental benefits of any reclamation program should be substantial. The following comments focus on six areas (conservation plans, reclamation cost estimates, availability of SCS personnel, environmental consequences, production returns, and relationship to other programs) where more analysis appears to be necessary before the final environmental statement (FES) is prepared and a specific reclamation program is designed.

### Conservation Plans

The environmental and technical problems involved in reclaiming abandoned mined land are distinctly different, in many cases, from the normal conservation planning activities of the Soil Conservation Service (SCS), but the DES does not mention how local SCS Technical Guides will be modified so that they

can be applied to special needs of RAMP. Since different practices may be required in different counties and states, an evaluation at the Area, State and Technical Service Center levels in SCS will be necessary to determine what additional material should be added to local SCS Technical Guides in order to implement RAMP. It is likely that procedures and technical specifications for practices will need to be developed as the program proceeds. The FES should describe how this will be accomplished.

For example, a systematic classification system for mine spoils will need to be developed and soil scientists and conservationists will need to be trained to use the system. The classification of mine spoils in the Soil Taxonomy as Udorthents is probably not adequate, although it, in combination with the spoil classification system used in Kentucky (Kentucky Guide for Classification, Use and Vegetative Treatment for Surface Mine Spoil, SCS Lexington, Kentucky, 1973), provide a starting point for a national mine spoil classification system.

#### Reclamation Cost Estimates

The DES gives average cost for reclamation in the different regions of the U.S. on p. 5, ranging from \$2,700 per acre in the West to \$7,600 per acre in the East, but it is not clear how these figures were derived. The literature citations for reclamation costs in the DES (Evans and Bitler, 1975 and Persse et al., 1977--see list of references in DES) relate to active mines, not abandoned mined land. In many cases it is likely that

the costs of reclaiming abandoned mined land will be less than for current operations. For example, cost for reclaiming abandoned mined land to pasture in Kansas ranged from \$157 to \$427 per acre (Camin and Hardy, Mined Land Redevelopment: Southeast Kansas Part of the Ozarks Region, State Geological Survey of Kansas, 1972). A study by Argonne National Laboratory in 1973 estimated that costs of restoring abandoned mined land in Illinois would range from \$407 to \$1759 for pasture and \$2147 to \$7471 for row crops (Carter et al., Strip Mine Reclamation in Illinois, prepared for Illinois Institute for Environmental Quality, 1973). These figures appear to be significantly lower than the figures used in the DES, and if accurate, would increase the amount of land that could be reclaimed under various levels of funding.

The previously cited, and any more recent, information that is available on the cost of reclaiming abandoned mined land should be carefully evaluated so that cost/benefit estimates in the DES are as realistic as possible. The analysis should also take into account that problem areas, such as acid spoils, are likely to be more expensive to reclaim than areas that do not constitute a serious environmental hazard. Since the more expensive problem areas should receive high priority in RAMP, it may be that the program should be designed to reclaim fewer acres in the early phases, with reclamation of increasing acreages in later years (if it is, in fact, true that cost per acre will be less in areas with fewer environmental problems).

### Availability of SCS Personnel

The DES mentions on p. 7 that availability of SCS personnel to implement and service RAMP may limit the scale of a program, even if funding is available. However, no comment is made as to whether this may be, in fact, a problem. Manpower ceilings that have been in effect in recent years have hampered SCS in fully carrying out its currently mandated activities in some areas so it may be a real problem. The ability of SCS to administer a new program such as RAMP should be evaluated in the FES. If SCS should prove to be unable to carry out RAMP at a desirable level of funding, the program should make provision for the hiring and training of additional personnel.

### Environmental Consequences of Reclaiming Abandoned Mined Land

In general the environmental benefits of reclaiming abandoned mined land greatly outweigh the temporary adverse impacts that might occur during the reclamation process. In some situations, however, this is not necessarily true and the DES does not discuss these circumstances other than to say that an environmental assessment will be done on a site-by-site basis. The FES should identify or describe a system for identifying situations where adverse environmental impacts of reclaiming mined land may outweigh the benefits. The FES should also describe how personnel in SCS who will have responsibility for environmental assessments of reclamation proposals will receive additional training to enable them to recognize these situations.

For example, McConnell et al. (Operation Scarlift--Mine Drainage Abatement, Pennsylvania Dept. of Environmental Resources, Harrisburg, undated) have found in Pennsylvania that after many years of siltation and reduced flows in stream channels in abandoned mined areas, channel capacity may be restricted, with the result that reclamation work can increase downstream flooding. Also, in some very old acid spoils, the surface layers have been leached so that acid drainage is much reduced. Regrading such spoils, if not done properly, might actually increase acid drainage.

#### Production Returns

The DES states correctly that agricultural production and increases in tax bases resulting from reclamation of abandoned mined land would provide significant economic benefits. However, there is very little data available that compares the productivity of reclaimed abandoned mined land to productivity of previously existing soils. For more intensive agricultural uses, such as row crops, it is unlikely that the former productivity can be restored as easily as reclamation at an active mine. Landowners might become reluctant to participate in a reclamation program if tax assessments are increased without a concomitant increase in productivity. The FES should closely evaluate the potentiality of this problem. Your program should require evaluations of post-reclamation productivity, and develop sliding-scale guidelines for determining appropriate tax assessments on reclaimed land.

### Relationship to Other Reclamation Programs

To be effective, the Rural Abandoned Mine Program should be coordinated with other federal and state abandoned mine reclamation programs that are established under the Surface Mining Control and Reclamation Act of 1977. However, the DES makes no mention of how RAMP will relate to these programs. For example, priorities for selection of sites for reclamation should be compatible with those established in other federal and state programs. Also in special problem areas, where landowners are not willing to permit reclamation (thus triggering reliance on Section 407 of the Surface Mine Act) RAMP should be coordinated with Section 407 reclamation activities to the extent that adjacent or nearby landowners are willing to cooperate. It is understandable that the DES did not address this issue. Other programs are still in very early stages of formulation. Nonetheless, the FES should describe in a preliminary way how RAMP will coordinate with other reclamation programs.

### Conclusion

It is a pleasure to comment on an environmental impact statement on a program where the environmental benefits so greatly outweigh the environmental problems. The preceding comments have been made in the hope that they will be useful in designing the most effective Rural Abandoned Mine Program possible.

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ANALYSIS OF PUBLIC COMMENTS ON  
RAMP ENVIRONMENTAL IMPACT STATEMENT

Department of the Army Corps of Engineers

Comment 1: Although the proposed action is an environmental quality program with substantial positive environmental effects, certain individual reclamation projects that involve the discharge of dredged or fill material into waters of the United States may require a permit from the Department of the Army pursuant to Section 404 of the Federal Water Pollution Control Act, as amended.

The Soil Conservation Service should contact the appropriate Corps' District Office if a RAMP action is in the immediate vicinity of a Corps' project. This will allow the District Office to review the action's environmental assessment and insure that Corps' projects are not adversely affected by the program.

Response: The environmental assessment for each reclamation plan will identify actions that may require a Section 404 dredge and fill permit. In such instances, the appropriate sponsoring organization or individual land user will be advised of this requirement and will contact the District Office of the Corps of Engineers. Contact will also be made with the appropriate District Office when a reclamation plan is in the immediate vicinity of a Corps project.

U. S. Department of the Interior

Comment 1: The first two program priorities focus on protection of public health, safety, and general welfare; yet data as to the extent and severity of these problems are not available. There is no indication as to how much of the 1.1 million acres of abandoned coal mine lands presents an immediate or imminent threat to public health, safety, or general welfare, or how much resembles that shown in figures 4, 5, and 6.

Response: We agree that this information is not available at the present time. However, the selected alternative will identify the magnitude of the RAMP workload, by priorities, by authorizing program participation in all States with eligible unreclaimed coal mine lands. A nationwide signup period for potential program participants will enable ranking and servicing of applications in accordance with the priorities stated in PL 95-87.

Comment 2: There is no breakout of the acreage that would be eligible under RAMP. Identification of the more serious problems and elimination of ineligible lands will give the true

parameters of the program. We realize that inventories of this scope are planned but are not implemented as yet. The statement should discuss plans for acquisition of this data and indicate how it will be utilized in carrying out the program.

Response:

Approximately 1.1 million acres of abandoned coal mine land is eligible for RAMP assistance. RAMP will only be able to treat 8 to 10 percent of total abandoned coal mine lands in the United States. Applications from eligible land users with eligible lands and waters will define specific areas for RAMP assistance. SCS will cooperate with State reclamation agencies in gathering additional inventory data. The reader is referred to the response to comment 1 for additional information.

Comment 3:

Priorities for funding are treated as interrelated objectives rather than as explicit priorities for project selection established by the Act. Related to this problem is the emphasis on acres reclaimed and productivity restored rather than abatement of hazards or threats to public health, safety, and general welfare. It is not clear how the priorities will be reflected in project selection. Also, it is not indicated how selection will be made between competing projects of the same priority.

Response:

The final EIS has been rewritten to clarify the order of priorities. SCS believes that an entire reclamation site should be treated under RAMP so that all problems are corrected and maximum environmental benefits are achieved.

Comment 4:

Alternatives evaluated are limited to levels of program funding, geographical distribution of projects, and post-reclamation land use. Implicit throughout the statement is the apparent assumption of "total reclamation" rather than a recognition that first priorities are protection of public health, safety, and general welfare.

Response:

The final EIS clearly indicates that priority 1 applications will be serviced before priority 2 applications, etc. Reclamation sites treated by SCS under RAMP will restore inadequately reclaimed areas so that they do not continue to endanger public health and safety, or continue to degrade the environment.

Comment 5:

The following program alternatives also merit serious evaluation and consideration:

1. Concentrate program efforts on projects in order of priority as mandated by the Act.
2. Emphasize projects with highest benefits toward abatement of offsite hazards and damages.

3. Limit reclamation efforts to the levels sufficient to meet Priorities 1 and 2 rather than the more extensive reclamation that may be necessary to produce cropland.
4. An alternative incorporating all of these thoughts would be to conduct the program so as to maximize protection of public health, safety, and general welfare rather than focusing on acres reclaimed and post-reclamation land use.

- Response:
- (1) Refer to responses 3 and 4.
  - (2) RAMP is not a project-type approach. RAMP works with individual land users. It is a voluntary program; therefore, offering a range of uses will help attract participation. Cost-share rates are established to encourage reclamation of abandoned mine lands that would create the greatest offsite (public) benefit. Increased cost-share rates, up to 100 percent, will be used when the main benefits are offsite and there would be a financial burden to the land users. Therefore, the program is designed through cost-share rates and priorities to encourage participation in RAMP where the main benefits of reclamation would accrue to the public.
  - (3) The priorities for funding RAMP contracts apply to all eligible land uses. A minimum level of reclamation will be required to adequately reclaim eligible lands regardless of the post-reclamation land use. The selected alternative will encourage a variety of land uses for the reclamation sites in accordance with Section 406 (a) of PL 95-87. Since RAMP is a voluntary program, the range of eligible land uses will encourage program participation by providing a case-by-case determination of practical and feasible post-reclamation land use.
  - (4) Main benefits and cost-share rates are designed to maximize public benefit.

Comment 6: The wildlife discussion fails to recognize that certain of these abandoned lands may harbor or be of importance to endangered or threatened animal or plant species. The statement should indicate how and at what points in the program SCS will take the steps necessary to carry out its responsibilities under Section 7 of the Endangered Species Act of 1973.

Response: The draft EIS stated on page 5 that the program will be conducted in compliance with the Endangered Species Act of 1973. The potential presence of endangered species will be analyzed during the environmental assessment process conducted for each RAMP reclamation plan.

Comment 7: However, land use following reclamation could adversely affect wildlife values. Therefore, appropriate measures should be included when implementing the Act to minimize adverse impacts of the Federally-funded reclamation projects on the wildlife resource. One such measure would be for local SCS offices to coordinate specific implementation of this abandoned mine program with Fish and Wildlife Service field offices.

Response: Wildlife values will be addressed in the environmental assessment of each proposed reclamation area. Alternatives that enhance wildlife benefits on reclaimed sites will be considered during the development of the reclamation plan.

SCS will consult with appropriate Federal, State, and local agencies in evaluating wildlife resources.

Comment 8: Page iv, Summary - The number one priority for funding lists: ". . . Protection of public health, safety, general welfare . . . from any extreme danger, yet under the consequences of no action, none of these items are indicated to be affected." This gives the impression that the public health, safety, and general welfare may not be a significant item for consideration. We suggest this conflict be clarified.

Response: The final EIS was rewritten to clarify this point. The description of the environmental consequences of the "no action" alternative has been strengthened. It points out that hazards to public health, safety, and general welfare will continue if reclamation of abandoned coal mine lands is not undertaken.

Comment 9: Also, there does not appear to be consistency as to level of breakdown as to consequences between "no action" and program implementation (3 items under "no action," 14 under program implementation).

Response: The section on the environmental consequences of "no action" summarizes the broad impacts that would not be realized if the present abandoned mine land situation continues unchanged.

The description of the other environmental consequences of the selected program and the other alternatives considered is more specific because a definite action is being proposed.

Comment 10: P. vii, Summary, last sentence - Although a site specific assessment will identify potential impacts, it must do more than that. This was recognized earlier on p. v.

Response: We agree with your comment. However, since the statement on page vii of the draft EIS was a conclusion of a more thorough discussion (page 5 of the draft EIS) we do not believe the environmental assessment process needed further explanation.

Comment 11: P. 3, Composition of conservation plans - It is not evident whether the expedient of flooding and sealing abandoned mines has been considered. In some situations these procedures may minimize oxidation and resultant impacts on aquifers.

The statement should consider reclamation of lands affected by surface subsidence and fracturing that are related to underground mining. Changes in surface drainage, decreased use of land, and pollution of aquifers are among effects of such subsidence and fracturing.

Reclamation of lands covered by waste materials from underground mining should be more adequately addressed.

Response: We agree. Actions that would be taken to treat these problems are included in the final EIS.

Comment 12: P. 7 - The environmental assessment made under the extreme danger provisions of Priority 1 should include evaluation of feasible alternatives, identification of significant environmental impacts, and possible mitigation measures.

Response: We agree. The limited environmental assessment will address these items as time permits. However, expedient action will be critical since the "extreme danger" described by priority 1 represents a condition that can be expected to cause substantial harm to persons and property.

Comment 13: P. 10, Fig. 2 - On the map of Alaska, one abandoned coal mine area appears to be in a large roadless area, the other almost in a national park (Mt. McKinley). This may be a result of map scale.

Response: We agree. The map scale distorts the exact location of the 2,700 acres of abandoned coal mine land that exists in Alaska.

Comment 14: P. 20, Range type, last sentence - Refers to inferiority of vegetation in relation to that surrounding the spoil. We suggest that it be made more descriptive to reflect in what way it is inferior, such as ground cover, erosion control, wildlife habitat, etc. Inferiority for one purpose may be superiority for another.

Response: We agree. This sentence has been rewritten in the final EIS.

- Comment 15: P. 33 - The term, "U.S. Geological Service," should be corrected to read "Geological Survey."
- Response: This correction has been made in the final EIS.
- Comment 16: P. 39, Adverse impacts - Measures such as temporary sediment traps should be considered in order to minimize sedimentation resulting from increased erosion and sediment production during construction activities.
- Response: We agree. These measures will be used as needed to reduce erosion during reclamation activities. These items are discussed on page 3 of the draft EIS.
- Comment 17: Table 2, Annual changes due to reclamation - This emphasizes the priority 3 objectives rather than priority 1 and 2. Much of the tabulation is devoted to land use of reclaimed acres, value of production, net income, improved tax base, employment, and income with only a few lines devoted to runoff, water quality, erosion (limited to onsite), and health and safety (buried under Esthetics).
- Response: Table 2 was prepared to assist decisionmakers in analyzing the tradeoffs between the various program alternatives. RAMP applications will be serviced and funded according to the order of priorities listed in PL 95-87. The items described above were outlined in detail to fully disclose program options under any priority work. SCS anticipates over the program life that the majority of RAMP applications will involve priority 3 work. Priority 3 reclamation work may also be performed on reclamation sites assigned a priority 1 or 2 rating. The total reclamation work needed on the reclamation site will be applied to solve the entire problem.

#### Department of Health, Education, and Welfare

- Comment 1: We feel, however, three areas of concern exist which need more commitment and discussion in the final EIS:
1. Surface and subsurface temperatures (hot spots) on abandoned refuse piles must be dealt with, and special preparation and procedures implemented to remove the potential hazards prior to aesthetic reclamation.
  2. Many portals to underground mines (closed) before pre-law mining present continuous pollution problems to streams and water supplies. As stated on page 18, water enters the overburden fractures, runs along the drifts and eventually seeps out the portals. These portals may support climax vegetation and appear aesthetically finished.

3. Eliminating the disposal area for solid waste (abandoned mine sites) will modify the environment of people in the surrounding area. When this operation is begun, an adequate refuse disposal program and site should be paralleled with the undertaking.

Response:

We agree with your three concerns and will give consideration to them as technical standards, specifications, and guides for reclamation are developed. The RAM program will treat and remove hazards from abandoned coal mining as well as improve aesthetic values. The EIS has been enlarged to address how RAMP will treat problems according to priority and use appropriate methodology to solve them. Standards, specifications, and guides will be developed in conjunction with the Office of Surface Mining to meet these needs.

Office of Equal Opportunity, U.S. Department of Agriculture

- Comment 1: We have reviewed your Draft Environmental Statement for the Rural Abandoned Mine Program and have no civil rights recommendations to make.

Response: None required.

U. S. Environmental Protection Agency

- Comment 1: Level of Funding - The draft EIS discusses an annual RAMP funding level of \$40 million. While EPA cannot assess this amount in terms of its ultimate adequacy, it would appear appropriate to begin the program with a modest sum and to raise the funding levels in later years as experience is gained. This would avoid a rush to implement the program only in order to allocate the available monies. Such a rush could result in funding an initial program which produced little in the way of positive results because it had been entered into without adequate planning. We would recommend serious SCS consideration of limiting the first-year activities to a total of five projects (a "project" designating a single tract of land in a single State.) The projects might be allocated as follows: two in the East, two in the Midwest, and one in the West. The geographic allocation is based on hypothetical variations in sediment yield (higher in the steeper terrains) and in value to agriculture (higher in the midwestern States.)

Response:

The draft EIS notes (page 2) that funding for the RAM Program could exceed \$40 million. Alternatives for the program were analyzed on a funding range of \$0 to \$40 million (page 7, draft EIS). Actual program support is based on fund transfer from the Secretary of Interior to the Secretary of Agriculture (PL 95-87, Sec. 401 (c) (2)) and is expected to vary from year to year. The Office of

Management and Budget has authorized \$5 million for FY 1978 and \$10 million for FY 1979. RAMP funding has been clarified in the final EIS.

Comment 2:

Geographical Allocation of Funding - EPA believes that an important factor in determining the allocation of funding should be the projected return on expenditures. The returns are to be measured in terms of control of erosion damage (which includes conservation of soil resources) and terms of conservation and development of water resources (see Section 406 (a) of P. L. 95-87). We suggest that geographical allocation could be based on the projected reductions in sediment delivered to surface water systems in excess of natural erosion and on the improvement in waters affected by erosion from surface mined land.

We have suggested, in our response to the previous issue, that initial projects be weighted in favor of the East and Midwest since steep slopes and humid climates lead to persistent erosion and since vegetative reclamation may be accomplished within shorter time frames in the East and Midwest (compared to the West). Thus the chances for measurable success in reasonable time periods appear greater in the more humid climates than in the semi-arid to arid climates of much of the western interior United States. Finally, such an allocation of funding would reflect the amount of disturbed land in each of the three geographical regions.

Finally, the draft statement lists three priorities for funding reclamation work. Title IV of the Act has six priority levels all of which fit the development of soil and water resources. The three eliminated priorities should be reinstated in the final EIS or clearly shown to be inappropriate to RAMP. These national priorities should provide SCS a basis for establishing the regional priority ranking factors referred to earlier for the programmatic statement discussions.

Response:

The selected alternative provides for participation in RAMP without geographic restrictions in accordance with Section 406 (a) of PL 95-87. The law clearly indicates the purpose of this legislation is to reclaim abandoned coal mine lands wherever they occur in the United States.

Implementing a nationwide RAM Program may also provide certain states with the only Federal Program available in their State to treat unreclaimed mine lands. States with small amounts of abandoned coal mine land may not implement a State reclamation program or participate in other programs authorized in PL 95-87. RAMP applications will be serviced in order of priority shown in Section 403 of PL 95-87. The last three funding priorities in Section 403 of PL 95-87 are not applicable to RAMP.

Comment 3:

Program Objectives - The established program priorities and goals should be clearly linked to the administration of the program to demonstrate that the funds utilized for RAMP will maximize the effectiveness of the Federal effort to meet the objectives of the law. In the draft EIS, priorities are listed on page 1; however, no ranking of them occurs. Their influence on actual program implementation is not demonstrated. This should be discussed in the final EIS. Also, SCS should consider how to receive and process funding requests (centralized or decentralized administration) to maximize the use of the limited program funds.

Response:

The priorities shown on page one of the draft EIS are in order of rank and respond to the provision of Section 403 of PL 95-87. The final EIS has been revised to reflect the priority ranking and show that SCS will administer its program in accordance with them.

Comment 4 :

Pilot Program - The complexity of land reclamation on a national scale may warrant the development of a pilot program by SCS to gain experience in this area. Such a program could help ensure adequate regulations for a program having considerable impacts if funded on a large scale. One possible approach could be the initial funding of five pilot projects as noted above. After the projects' initiation, monitoring and short-term evaluation, necessary program adjustments could be made. Wide scale implementation of RAMP could then occur. We also encourage SCS to act expeditiously on proposals that would remedy pressing public health problems. EPA believes that this basic approach deserves serious SCS consideration.

Response:

We agree that land reclamation on a national scale is complex. Implementing RAMP on a pilot basis was considered. However, there is a need to establish, early in the operations of the program, where the interest and high-priority workloads exist. Therefore, pilot projects were not feasible. Provisions for monitoring and short-term evaluation are included in the annual review and inspection of reclamation sites during the contract period. Reclamation plans which respond to public health problems (extreme danger) have first priority under the provisions of Section 403, PL 95-87. Initially, there will be a limited number of contracts because of the limited funds. This will allow SCS to gain experience and to refine procedures before the program is funded on a large scale.

Comment 5:

Program Implementation Schedule - The timing of the projects to be funded should be considered in the final EIS. Since there will be short-term pollution resulting from reclamation activities, SCS should discuss in the FEIS an approach to this program that protects against unreasonable short-term impacts in local areas. For each

alternative approach to RAMP, it may be useful to develop timetables for implementation which point out when program benefits and costs will occur.

Response:

Short-term pollution that would result from installing construction plans is addressed on page 30 and 33 of the draft EIS. SCS plans to use both temporary and permanent measures to minimize these effects as noted on page 3 of the draft EIS. Actions to minimize the harmful effects of construction-related pollutants, such as mulching or restricting the area subject to accelerated erosion, are part of SCS standards and specifications.

Comment 6:

State Coordination - The draft EIS does not show that the Soil Conservation Service plans to coordinate its program with State reclamation programs. EPA believes it would be useful to have Federal coordination with State programs. This would eliminate any possible duplication of effort and help make compatible all governments' work in coal land reclamation. We suggest that the SCS consider a procedure which enables proper Federal and State agencies to coordinate the selection and review of candidate projects. This is especially important to EPA since reclamation can, as noted in the draft EIS, cause additional water pollution of at least a temporary nature.

Response:

We agree, the relation of RAMP to other programs under Title IV, PL 95-87, is included in the final EIS.

Comment 7:

Additional Program Features - We would like to suggest that, in administering this program, SCS also develop criteria for:

- A. Determining at what point mined rural lands are considered to be abandoned.
- B. Determining and quantifying the processes causing soil or water degradation.
- C. Projecting the effectiveness of proposed reclamation.
- D. Measuring success of the reclamation activities.

Response:

We agree with these suggestions. Criteria for defining abandoned rural mine land and quantifying processes causing soil and water degradation are defined in the regulations and/or assessment techniques. Most of the conservation measures and practices to be used in the reclamation plans are used in other SCS programs. SCS and other agencies are assessing the effectiveness of these actions. The annual inspection of reclamation sites during the contract period as part of operation and maintenance (see page 4 of the draft EIS) will help ensure adherence to the plan.

Comment 8:

Post-reclamation land uses - EPA believes it is reasonable to include as planning criteria certain measures of reclamation success--or returns on the investment of reclamation for specific land use categories. If a particular land use category provides the potential for greater soil and water conservation, it would appear that the Surface Mining Control and Reclamation Act (PL 95-87) would favor this land use. If the draft EIS has properly evaluated, the "representative annual erosion rate" for land uses, forest land, and wildlife land would deserve highest consideration as meeting the objectives of Section 406 of the SMCRA. (We suggest, however, that SCS estimates are averages and that site-specific selections of post-reclamation land uses should depend on more detailed assessments of the projected erosional stability of this area.) The Department of Agriculture should consider Section 515 (b) (2) of PL 95-87 in assessing post-reclamation land uses.

Response:

We agree that the post-reclamation land use should maximize soil and water conservation. All reclamation plans, regardless of the final land use are expected to reach this objective because each plan will be an adequate resource management system. The system would be designed, so that it reduces erosion to or below the tolerable soil loss. The reduction in soil erosion is site specific and will be evaluated as part of the environmental assessment.

We do not agree that the provisions of Section 515 (b) (2) of PL 97-87 apply to RAMP because it would exceed the priority objectives of the program. The reclaimed use should be a function of the natural resource base and the technical feasibility and practicality of the plan.

Comment 9:

The weighted average costs for reclamation in the three regions may be somewhat low. For example, the average cost to return an acre of Montana surfaced mined land to grazing use with 4' topsoil, 10 % slopes, is \$3,807 (M. J. Watts, Staff Paper 75-24, Department of Economics, Montana State University, Bozeman). In addition, it is important to consider that this cost is achieved with personnel and equipment who are already on site, and are familiar with reclamation techniques effective for the particular mine site. The reclamation of orphan lands may well require methods which are far more costly due to extremely adverse conditions. It is recommended that State reclamation offices be consulted in this regard, since most have done some orphan lands reclamation. A higher cost/acre estimate would affect the number of acres projected for reclamation throughout the draft EIS.

Response:

The site specific nature of reclamation cost estimates results in the large potential variation. We believe that the costs used in the draft EIS are sufficiently

close to allow the impacts of implementing RAMP to be adequately assessed. Please refer to comment 2 of the National Wildlife Federation for additional details.

Comment 10:

The draft EIS notes that the \$40 million annual funding would reclaim 5,000 acres for "intensive agriculture" or 5,800 acres for wildlife. EPA suggests that the difference in number of acres reclaimable for the two uses is probably greater than indicated. Surface shaping and erosion control methods would be much more extensive, and costly, for annual cropping than for wildlife habitat in permanent native cover.

Response:

We agree that the cost of reclaiming mined land to cropland would be greater than the costs of reclaiming to wildlife land. This would result in treating less land for the same amount of funds (see table 2 of the final EIS). The flexibility allowed to reclaim eligible land to its technically feasible and practical use is an important part of the program selected. Please refer to responses to comments 8 and 9 of the U. S. Environmental Protection Agency for further information.

Comment 11:

Is the figure of 5,000 acres (p.V) correct for the amount of land versus cost which will be required to reclaim both wildlife habitat and agricultural acreage?

Response:

The 5,000 acres shown for wildlife was in error and should have been 5,800 acres.

Comment 12:

Definition of the term "extreme danger" (p. 1) would be very useful.

Response:

Extreme danger means a condition that can be expected to cause substantial harm to persons and property.

Comment 13:

The presentation of the conservation plan (p.3) does not evaluate the need for geological reconstruction which is often necessary prior to any vegetative, mechanical, or management practices. Terrain reshaping and soil conditioning are essential to revegetation and may eliminate various mechanical needs. The final statement should not ignore this major reclamation feature.

Response:

We agree. Terrain modification is considered to be part of reclamation and will be used to the extent necessary to support the planned land use. The final EIS has been modified to further describe this practice.

Comment 14:

In using the Federal budget figure to derive what benefits may be obtained by implementing RAMP, SCS approximates costs of land reclamation in various regions of the country. EPA feels that the reclamation costs per acre (p. 5) may be too optimistic. However, this may be offset to some degree by SCS not considering in its

benefit calculations the fact that Federal money will bring additional private investment in land reclamation through the RAMP cost-sharing scheme.

Response: We agree. Please refer to the responses to EPA comments 8 and 9 for additional information.

Comment 15: The discussion on toxic spoil (p. 17) ignores problems associated with radioactivity and trace elements. A complete regional analysis of spoil pile composition should be done to adequately address the severity of toxic spoil. Natural elements, such as those mentioned, may influence anticipated land use. In addition, compliance by Rural Abandoned Mine Program with Sections 3004 and 4004 of the Resource Conservation and Recovery Act should be demonstrated.

Response: We agree that if levels of radioactivity or toxic trace elements exist and are high enough to form an environmental hazard, the reclaimed land use and reclamation plan would be significantly affected. This consideration will be part of the environmental assessment for the development of each reclamation plan.

Many spoil areas are used unofficially as dumps, but neither storage areas for hazardous materials (Section 3004) nor sanitary landfills (Section 4004) are eligible uses for reclaimed land under RAMP. Therefore, it is not anticipated that these sections of PL 94-480 would apply to the program.

Comment 16: The section on water pollution (p. 17) deals with the problems in the East and is primarily limited to Appalachia. The draft EIS does not address the water pollution problems of mining in the Midwest or West. This should be addressed in the final statement on a regional and a State level.

Response: We agree. The final EIS recognizes the wider scope of the water quality problem.

Comment 17: This document indicates that the greatest water pollution problems from mining occur in the East (p. 17). However, there is no comparative data to support this. With limited water availability in the West, any mine runoff may pose a greater threat than a similar runoff in the higher rainfall areas of the East. Substantive information is needed in the final EIS on both surface and ground water effects of RAM Program.

Response: We agree that water pollution associated with abandoned mine lands is a national problem. The selected alternative for RAMP will allow the problem to be addressed on a nationwide basis. Data contained in the draft EIS establishes the need to consider the ground water and water quality

problems associated with abandoned mine lands on a site-by-site basis. The final EIS reflects the national scope of these problems.

Comment 18:

In the Environmental Consequences section (beginning on p. 22), a number of conservation practices are described for grassland, rangeland, and forest land. These practices imply a program of continuous management. Since it does not appear that any governmental entity, or the landowner, is required to carry out such practices, EPA urges that SCS design grassland, rangeland, and forest reclamation in a permanent, self-sustaining manner except in cases where the landowner desires to assume responsibility for such conservation practices.

Response:

Operation and maintenance is a necessary part of any conservation practice or structural measure that would be part of a reclamation plan. The provisions for operation and maintenance by the landowner and the annual reviews to insure adherence to the contract were discussed on page 4 of the draft EIS. Management is a part of the needed maintenance and will be a provision of RAMP contracts.

Comment 19:

The section on production returns (pp. 35-36) attempts to justify reclamation expenditures by identifying potential economic benefits. The discussion revolves around crop production often due to the difficulty in quantifying water quality and wildlife benefits. However, information on increases in recreational user days and associated expenditures can be expressed and should be included in the final programmatic statement.

Response:

We do not agree that the discussion of program impacts on production returns shown on pages 35 and 36 of the draft EIS is an attempt to justify reclamation expenditures through economic means. It notes only the impacts to that part of the human environment. Note on page 37 of the draft EIS that economic benefits would not offset costs of a program designed to meet environmental quality goals. The description of impacts shown on page 38 identifies the type of noncommercial benefits that would accrue from the program. The benefits have not been estimated in user day or monetary terms because there is no requirement that the program be economically justified.

Comment 20:

The section on esthetics (p. 37) should clearly differentiate between short-term and long-term effects and onsite and offsite results of RAMP.

Response:

We agree. The FEIS has been strengthened to reflect the distribution and longevity of esthetic effects.

Comment 21: EPA believes that a large number of the more specific points made above may have actually been considered by the Soil Conservation Service in its development of plans for the Rural Abandoned Mine Program. However, it would be useful for SCS to compile all this information in the final EIS.

Additional information would be useful in many other areas of the final EIS. The final EIS should include the program's proposed rules and regulations cited in the draft statement. Also, it may be useful to append several documents, or pertinent sections, from which SCS draws statistical data to support its analysis. For instance, the reclamation cost figures are drawn from Bureau of Mines Information Circulars IC-8737 and IC-8695 and a 1978 DOI report. Appending pertinent sections of these documents to the EIS will allow reviewers the opportunity to see from where SCS calculations derive and upon what assumptions they may be based. Several statements are not supported in the text at all. For instance, where do the soil erosion rate numbers come from on pages 29 and 30? We believe the SCS analysis would be strengthened if all statistical data were supported and their underlying assumption set forth as reasonably as possible.

Response: The RAMP environmental impact statement has been drafted to present program impacts in the concise manner requested by Executive Order 11991. It is designed to be useful to decisionmakers rather than be encyclopedic. Materials that were used to develop the statement are routinely available or easily obtained through common sources. Details of these materials are therefore included by reference. This method follows Section 1502.21 of the Council on Environmental Quality's proposed regulation implementing the National Environmental Policy Act (43 FR 25238, June 9, 1978). The format for the statement is as similar to that proposed by these regulations (Section 1502.10) as SCS found practicable.

The proposed rules and regulations for RAMP were published for public information and comment in the Federal Register on April 11, 1978 (43 FR 15312-15318). Copies of these proposal regulations were also made available to potential commentators on the draft EIS. Final regulations will not be filed until NEPA actions associated with the final EIS have been completed. Public meetings on the regulations were also held. In view of the extensive public notification and solicitations for input to this rulemaking, the republishing of these proposed regulations seems unnecessary.

The soil erosion rates shown in the draft EIS are clearly labeled as estimates. They result from nationwide experience of SCS in estimating erosion in conservation plans and

projects. In as much as specific sites of reclamation plans cannot be known until eligible land users apply for assistance, these values were considered to properly estimate the magnitude of program impacts. Environmental assessments that are part of planning the reclamation of specific sites will be developed in support of individual reclamation contracts when the program is implemented.

Advisory Council on Historic Preservation

Comment 1: Specifically, we find that the extremely cursory treatment of historic and archeological resources on page 38 of the draft statement is an inadequate explanation of the method of identification of resources and discussion of their effect. We specifically disagree, for example, with the statement contained on page 38 that, "It is very doubtful that significant archeological or historical resources would still exist in abandoned coal mine areas." For example, tangible evidence of mining and processing techniques may be extant in such abandoned areas and would represent a contribution to the industrial archeological knowledge of the Nation. We recommend that you consult with Mr. Eric DeLony of the Historic American Engineering Record, Heritage Conservation and Recreation Service (Department of the Interior, Washington, D.C. 20240) to develop a proper methodology for identifying and evaluating these industrial resources. This section of the draft statement should be entirely re-written to reflect the current state of industrial archeology in the country in relation to coal mining practices and an indication of the manner in which the SCS will comply with the provisions of 36 CFR Part 800.

Response: The Soil Conservation Service (SCS), on pages vii (summary), page 5, and elsewhere in the draft EIS, has stated that an environmental assessment will be conducted during and as an inseparable part of the planning process of each RAMP contract. The specific procedural criteria for conducting an environmental assessment are contained in published SCS rules and internal planning documents. These procedures are included only by reference in keeping with the concerns of E.O. 11991 and the draft CEQ regulations (Section 1502.21). However, each environmental assessment will always consider archeological, historical, and other cultural resources that may be affected by SCS-assisted actions (7 CFR 656). These same procedures will be followed in the RAM Program. Compliance with the National Historic Preservation Act and the numerous other historic preservation laws and executive orders occurs in each environmental assessment. We therefore believe the paragraph on page 38 of the draft adequately addresses cultural resources.

The environmental assessment conducted by SCS for each reclamation plan will identify resources which may have industrial archeological values. In keeping with our regulations we would be pleased to consult with Mr. DeLony.

Comment 2: Similarly, the section on page 5 and page 38, regarding applicable environmental laws and regulations should specifically reflect the provisions of the National Historic Preservation Act and the Procedures of the Council (36 CFR Part 800).

Response: We agree. The partial list of laws and executive orders on page 5 has been amended to include the National Historic Preservation Act of 1966 and the Archeological and Historic Preservation Act of 1974.

#### Tennessee Valley Authority

Comment 1: At present there is nationally a lack of information on the level of improvement in water quality which can be achieved through a reclamation program such as RAMP. In order to measure the successfulness of the project in terms of water quality improvement and to provide guidance for continuing work, we suggest demonstration watersheds to be selected for detail study of improvements resulting from reclamation practices.

Response: Our regulations permit demonstration projects that directly relate to priorities that are stated in the law. Due to the 320-acre limitation, it is important that demonstration projects under Section 406 be applied on less than a watershed basis. Larger demonstration projects are provided for in Title IV, and the Soil Conservation Service will be glad to participate in such projects on a watershed basis.

Comment 2: A benefit associated with implementation of RAMP includes decreases in trash dumps and subsequent reductions in associated disease vectors and pests. However, there is no discussion of how reclamation will decrease rural dumping of trash. If no alternative means of disposal is provided, we assume that RAMP will supply more aesthetically acceptable dumps.

Response: There is much illegal open dumping and other types of littering occurring on abandoned mine land. The program proposes to eliminate many of these open dumps by filling in the pits and covering the material that was previously dumped. It is recognized that this may cause dumping in other areas. It may also encourage persons using these dumps to put trash in a sanitary landfill. In addition, it is felt that open dumps attract insects and vermin and the elimination of these areas would reduce the problem.

Comment 3:

Recreation is identified as a land use after reclamation on page 7 (we assume a primary use), and is not considered a primary land use (page 38) in discussion of impacts. Though we generally agree with the discussions of impacts to recreational uses, we believe recreation opportunities are being overlooked with the thrust of the discussion. Reclaimed lands, particularly with a combination of reclamation "types" (forest, wildlife, pasture, etc.), offer opportunity for many types of recreational uses, including environmental education, camping, hunting, fishing, trails, etc.

We recognize that any use of these lands is dependent on landowner desires; however, selected properties could be used for the primary purpose of recreation. Since Federal funds are being used for reclamation, it seems logical that easements or agreements with the landowner would be appropriate, in some instances, for recreation purposes. These agreements may be interim or indefinite land uses, but, in either case, would significantly add to the overall program benefits. Therefore, we recommend that recreation land uses be considered as a primary use and not merely as a benefit, if compatible, with other uses.

Response:

Noncommercial recreation is considered to be a prime land use and is included in the acreage figure for Fish and Wildlife land and Recreation land. This is reflected in the high cost to reclaim to Fish and Wildlife and Recreation land--\$6,900 per acre.

In addition to the recreation that will take place on the acreage devoted only to recreation, recreation will be a secondary land use on a large part of areas reclaimed to other uses. These activities would include hiking, hunting, sightseeing, fishing, horseback riding, target shooting, some camping and other activities. The hunting and fishing will occur in conjunction with improved habitat, food, and cover.

Comment 4:

Unreclaimed land does not always produce low quality wildlife habitat. Small scale, 20-year-old revegetated orphan mines can produce very good wildlife habitat on Appalachian contour mines especially for ruffed grouse, quail, rabbits, and nongame birds and small mammals. Intensively reclaimed orphaned mines often are of lower habitat quality than naturally revegetated orphan mines. Also, foliage structure and vegetative diversity is frequently better on naturally revegetated mines.

Generally, the creation of wildlife habitat makes more sense in the steep contour mines of the Southern Appalachians than most of the other land use options with the possible exception of pasture land. However, pasture

land may not be a realistic alternative in most areas due to its remote nature and the inherent difficulty and high cost associated with fencing.

Forest products from abandoned mine lands will probably not have a high commercial value due to mineral strain and the irregular growth form of the trees, at least for the first rotation.

Response:

The definition of inadequately reclaimed land has been revised as follows in response to comments:

Lands or water affected by mining or mining processes conducted before August 3, 1977, that continue in their present condition to substantially degrade the quality of land or water resources, or damage beneficial used, or endanger the health or safety of the public. Those areas that are partially or fully revegetated would, in all likelihood, not be eligible under the rules and regulations of RAMP.

We agree that many of the spoil areas that have been restored naturally or through reclamation by private and public entities are good quality wildlife land. SCS believes the system of priorities for the RAM Program would not affect these areas unless priority one or two conditions exist on them. To be consistent with program objectives, all reclamation plans must restore land to a feasible and practicable use that is compatible with surrounding land uses.

Comment 5:

Specific Comments

1. Page V - Environmental Consequences

The acreage figure stated in paragraph 2 (" . . . reclaiming land only for wildlife use would yield 5,000 per year . . . ") appears inconsistent with the figure given in paragraph 9 ("Improved fish and wildlife habitat on approximately 5,800 acres per year. . ."). Perhaps, a clarification of the definitions involved could explain this 800-acre difference. Any assumptions concerning the improvement of fish and wildlife habitat should incorporate the possibility of permanent loss of fish and aquatic habitat each year as ponds are drained and filled, as well as the disruption of existing wildlife in these areas.

Response:

The 5,000 acres shown in paragraph 2 was in error and should have been 5,800 acres.

Comment 6:

Page VI and 4 - Provisions of Agreement

The second sentence from the bottom of the first full paragraph states that the Government's share of the cost will be reduced up to 0.5 percent per acre for reclaiming areas exceeding 120 acres.

However, the second sentence from the bottom of the last paragraph on page four states that the Government's share will be reduced by 0.1 percent per acre exceeding 120 acres. This discrepancy should be corrected.

Response:

We agree and have made the correction.

Comment 7:

Pages 3 and 4 - Provisions of Agreement

To ensure maximum benefit from the program on the reclaimed land put back into agricultural use, we recommend that the long-term agreements with landowners specify the use of best management practices as identified in an approved statewide 208 plan. In addition, we suggest that a much longer agreement (perhaps 40 years) would be necessary for forest benefits to accrue. We recognize, however, that the maximum agreement period the Secretary is authorized to enter into under the Surface Mining Control and Reclamation Act of 1977 is ten years.

Response:

We agree with this concept, but there are many States that have not completed their State water quality plans or developed best management practices. SCS recognizes that an extended period of time will be necessary for all land uses to be fully productive and that the benefits will accrue far beyond the contract period; however, the length of contract period (maximum 10 years) is a requirement of the law.

Comment 8:

Page 4 - Basis of Cost Sharing

While we recognize that the maximum acreage permitted to be reclaimed under RAMP is 320 acres, it should be noted that the corporations often own large tracts that greatly exceed this amount. The amount of acreage in excess of 320 acres owned by a single land user should be established and the potential effects of such ownership discussed.

Response:

We agree. This will be part of application evaluation.

Comment 9:

Page 5 - Operation of the Program

An operational definition of a "restored" stream, third paragraph from the bottom, should be included in the draft.

Response: Reference to a restored stream has been deleted from the final EIS.

Comment 10: Pages 9, 12, and 13 - Climate, Topography, and Land Use

The total number of acres in the coal bearing counties within the eastern and western coal fields is provided; however, no value is given for the midwest coal fields. For consistency and comparative purposes this figure should be provided.

Response: We agree. Appropriate adjustment has been made in the final EIS.

Comment 11: Page 18 - Water Pollution

In the third paragraph it is unclear whether the 14,000 miles of stream channel are affected by active, abandoned, or both types of surface mines.

Response: The effects on the stream channel occur from both sources.

Comment 12: The destruction of fish habitat by siltation should also be discussed in this section.

Response: We agree. One of the greatest sources of stream degradation is sediment deposition resulting from erosion on abandoned mine areas. A significant improvement should result from controlling the active erosion on abandoned mine areas. It is also anticipated that by burying highly acid spoil and revegetating these areas, acid pollution will be reduced. The reduction in both sediment deposition and acid drainage should improve the fishery habitat significantly.

Comment 13: Page 30 - Soil Erosion

The draft acknowledges the fact that reclamation activities will increase short-term erosion until vegetation becomes established. Conservation practices are available to minimize erosion and sedimentation during reclamation activities, and we believe the draft should address management practices to be utilized during construction and interim phases of the program. This is especially important in lands scheduled to go back into forestry use. Because, as stated on page 20 (fourth paragraph) of the statement, it takes eight to ten years for trees to provide good erosion control.

Response: Interim erosion control measures such as temporary diversions, mulching, minimizing the time that areas are exposed, straw, or hay bale sediment traps will be used during reclamation. Permanent measures will adhere to specifications and provide adequate cover to minimize erosion. In general, trees alone will not be considered an acceptable

sediment and erosion control cover because of the extended time frame required to provide sufficient canopy. Instead a combination of trees and grass will be used.

Comment 14: Page 31 - Storm Water Runoff

We suggest that the first full sentence ("There is a larger storm frequency in the West, but this figure was used for parallel comparison.") be modified to read "The average annual storm is less than 2.5 inches in the West, but it was used for parallel comparison."

Response: We agree. Appropriate changes have been made in the final EIS.

Comment 15: 11. Page 31 - Flooding

We recommend that the following paragraph be inserted immediately after the heading "Flooding":

Reduced channel capacity due to sediment deposition creates higher and more frequent overflows. Practices that could alleviate this problem include cleaning and subsequent channel maintenance until vegetative treatments take effect.

Response: We disagree. A discussion of a potential program action is not compatible with a discussion of the effects of program impacts.

#### National Wildlife Federation

Comment 1: The environmental and technical problems involved in reclaiming abandoned mined land are distinctly different, in many cases, from the normal conservation planning activities of the Soil Conservation Service (SCS), but the DES does not mention how local SCS Technical Guides will be modified so that they can be applied to special needs of RAMP. Since different practices may be required in different counties and states, an evaluation at the Area, State and Technical Service Center levels in SCS will be necessary to determine what additional material should be added to local SCS Technical Guides in order to implement RAMP. It is likely that procedures and technical specifications for practices will need to be developed as the program proceeds. The FES should describe how this will be accomplished.

For example, a systematic classification system for mine spoils will need to be developed and soil scientists and conservationists will need to be trained to use the system. The classification of mine spoils in the Soil Taxonomy as Udorthents is probably not adequate, although it, in combination with the spoil classification system

used in Kentucky (Kentucky Guide for Classification, Use and Vegetative Treatment for Surface Mine Spoil, SCS Lexington, Kentucky, 1973), provide a starting point for a national mine spoil classification system.

Response:

We agree. The SCS, on pages vii (summary), page 5, and elsewhere in the draft EIS has stated that an environmental assessment will be conducted during, and as an inseparable part of planning and development for each RAMP contract. The SCS Guide for Environmental Assessment (42 FR 40123 - 40167, dated August 1, 1977) describes the methodology. The specific criteria for developing of technical guides will differ from site to site and will be refined as the program proceeds. The purpose of the EIS is to disclose the general impacts of the RAM Program on the human environment.

The complex nature of individual reclamation sites will be determined by the site specific analyses in the environmental assessment. Measures to resolve the resource problems will include practices from the SCS Technical Guide as well as other appropriate solutions. Specialists and experts from SCS, other agencies, or sources will be used. Technical advances will be made in many disciplines to meet the challenges of the program. Where these special measures are required, the Technical Guide in the SCS field office serving RAMP applications will be amended so appropriate action may be taken. However, many of the SCS standards and specifications that have been developed for other programs are applicable to RAMP. The final EIS has been strengthened to describe these actions.

Comment 2:

Reclamation Cost Estimates

The draft EIS gives average cost for reclamation in the different regions of the U. S. on page 5, ranging from \$2,700 per acre in the West to \$7,600 per acre in the East, but it is not clear how these figures were derived. The literature citations for reclamation costs in the draft EIS (Evans and Bitler, 1975 and Persse et al., 1977--see list of references in draft EIS) relate to active mines, not abandoned mined land. In many cases, it is likely that the costs of reclaiming abandoned mined land will be less than for current operations. For example, cost for reclaiming abandoned mined land to pasture in Kansas ranged from \$157 to \$427 per acre (Camin and Hardy, Mined Land Redevelopment: Southeast Kansas Part of the Ozarks Region, State Geological Survey of Kansas, 1972). A study by Argonne National Laboratory in 1973 estimated that costs of restoring abandoned mined land in Illinois would range from \$407 to \$1,759 for pasture and \$2,147 to \$7,471 for row crops (Carter et al., Strip Mine Reclamation in Illinois, prepared for Illinois Institute for Environmental Quality, 1973).

These figures appear to be significantly lower than the figures used in the draft EIS, and if accurate, would increase the amount of land that could be reclaimed under various levels of funding.

The previously cited, and any more recent, information that is available on the cost of reclaiming abandoned mined land should be carefully evaluated so that cost/benefit estimated in the draft EIS are as realistic as possible. The analysis should also take into account that problem areas, such as acid spoils, are likely to be more expensive to reclaim than areas that do not constitute a serious environmental hazard. Since the more expensive problem areas should receive high priority in RAMP, it may be that the program should be designed to reclaim fewer acres in the early phases, with reclamation of increasing acreages in later years (if it is, in fact, true that cost per acre will be less in areas with fewer environmental problems).

Response:

We agree that reclamation costs are extremely variable and depend on the resources of each site and the goals of the reclamation plan.

SCS feels that reclamation of mine lands that have been abandoned would be more expensive than reclamation of active mines because (1) topsoil is frequently stockpiled during active mining and on abandoned mines it generally is not and a major cost of reclamation involves earth moving; (2) abandoned mines may be partially revegetated and reclamation work may require clearing these areas or else adding more vegetation; and (3) the segregation of soil horizons caused by active mining reduces the need for soil modifiers.

The referenced sources indicated a lower reclamation cost than used in our draft EIS--Kansas (\$157 to \$427 per acre), Illinois (\$407 to \$1,759 per acre). Both cases were active mining.

Reclamation costs are clearly variable and may range from \$500 to \$15,000 per acre. Certainly the cost of reclamation depends upon the topography, the soil, the geology, the depth and size of cut, as well as other factors. In Europe, some nations have been reclaiming land for a number of years. In Germany, more than 33,000 acres of land were restored as of 1974 to forestry, agriculture, and recreational uses. The reclamation costs experienced there, as of 1974, ranged from \$3,000 to \$4,000 per acre. Recognizing an inflation increase, these figures are comparable to the figures used in the draft EIS.

Costs for reclamation contained in this EIS were used to estimate the type and magnitude of the effects of the RAM

Program. The SCS will develop site specific costs that reflect the problems, priorities and resources of the site for each contract. Inasmuch as reviewers of the draft EIS indicated the costs are both too high and too low, we feel the costs are probably moderate estimates for the total program. Data sources suggested in your comments would be among those used in developing site specific costs.

Comment 3:

Availability of SCS Personnel

The DES mentions on page 7 that availability of SCS personnel to implement and service RAMP may limit the scale of a program, even if funding is available. However, no comment is made as to whether this may be in fact, a problem. Manpower ceilings that have been in effect in recent years have hampered SCS in fully carrying out its currently mandated activities in some areas so it may be a real problem. The ability of SCS to administer a new program such as RAMP should be evaluated in the FES. If SCS could prove to be unable to carry out RAMP at a desirable level of funding, the program should make provision for the hiring and training of additional personnel.

Response:

Since PL 95-87, Title IV, Section 406, mandates SCS to implement the RAMP, the availability of SCS personnel is not a factor. This sentence has been deleted from the final EIS.

Comment 4:

Environmental Consequences of Reclaiming Abandoned Mined Land

In general, the environmental benefits of reclaiming abandoned mined land greatly outweigh the temporary adverse impacts that might occur during the reclamation process. In some situations, however, this is not necessarily true and the DES does not discuss these circumstances other than to say that an environmental assessment will be done on a site-by-site basis. The FES should identify or describe a system for identifying situations where adverse environmental impacts of reclaiming mined land may outweigh the benefits. The FES should also describe how personnel in SCS who will have responsibility for environmental assessments of reclamation proposals will receive additional training to enable them to recognize these situations.

For example, McConnell et al., (Operation Scarlift--Mine Drainage Abatement, Pennsylvania Department of Environmental Resources, Harrisburg, updated) have found in Pennsylvania that after many years of siltation and reduced flows in stream channels in abandoned mined areas, channel capacity may be restricted, with the result that reclamation work

can increase downstream flooding. Also, in some very old acid spoils, the surface layers have been leached so that acid drainage is much reduced. Regrading such spoils, if not done properly, might actually increase acid drainage.

Response: We agree. This is one reason that SCS makes environmental assessment an integral part of reclamation planning at each site (see draft EIS, page 5). The environmental assessment to be developed for each RAMP contract will identify situations where adverse environmental impacts of reclaiming mined land may outweigh the positive environmental benefits. If such areas are identified, SCS would not provide funds to reclaim these areas.

The procedure for conducting an environmental assessment are included in SCS technical manuals and guides. The SCS Environmental Assessment Procedure (43 FR 40122-40167, dated August 8, 1977) describes the methodology which will provide interdisciplinary analysis for each reclamation plan. Training of SCS personnel in assessment procedures for RAMP reclamation plans is now underway.

Comment 5: Production Returns

The DES states correctly that agricultural production and increases in tax bases resulting from reclamation of abandoned mined land would provide significant economic benefits. However, there is very little data available that compares the productivity of reclaimed abandoned mined land to productivity of previously existing soils. For more intensive agricultural uses, such as row crops, it is unlikely that the former productivity can be restored as easily as reclamation at an active mine. Landowners might become reluctant to participate in a reclamation program if tax assessments are increased without a concomitant increase in productivity. The FES should closely evaluate the potentiality of this problem. Your program should require evaluations of post-reclamation productivity, and develop sliding-scale guidelines for determining appropriate tax assessments on reclaimed land.

Response: We agree. There are little data available that compares the productivity of reclaimed abandoned mined lands to productivity of previously existing soils. The SCS will evaluate the potentiality of this problem and conduct representative evaluations of post-reclamation productivity.

The program has the potential to increase land value on which tax rates are structured. However, SCS has no authority to determine tax assessments.

Comment 6:      Relationship to Other Reclamation Programs

To be effective, the Rural Abandoned Mine Program should be coordinated with other federal and state abandoned mine reclamation programs that are established under the Surface Mining Control and Reclamation Act of 1977. However, the DES makes no mention of how RAMP will relate to these programs. For example, priorities for selection of sites for reclamation should be compatible with those established in other federal and state programs. Also in special problem areas, where landowners are not willing to permit reclamation (thus triggering reliance on Section 407 of the Surface Mine Act) RAMP should be coordinated with Section 407 reclamation activities to the extent that adjacent or nearby landowners are willing to cooperate. It is understandable that the DES did not address this issue. Other programs are still in very early stages of formulation. Nonetheless, the FES should describe in a preliminary way how RAMP will coordinate with other reclamation programs.

Response:      We agree. A new section "Relation of RAMP to other Reclamation Programs" has been added to the final EIS under "Environmental Consequences."

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